Lumleian Lectures
ON
THE CONVULSIVE DISEASES OF WOMEN.

Delivered at the Royal College of Physicians,

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LECTURE II.

Epilepsy in pregnancy and lactation; cases—Chorea and ague in pregnancy; cases; conditions determining the convulsion—The influence of ovarian ninus—Vomiting in pregnancy; three groups of cases; complication with poisoned blood—Tetanus—Whooping-cough—The rise of convulsive diseases in pregnancy puts to test the various theories of the genesis of these diseases—Influence of the shock of convulsion in inducing structural change in nervous centres; in altering periodicity or susceptibility.

MR. PRESIDENT AND GENTLEMEN,—Since our last meeting one of the two women whom I described as suffering during pregnancy from uncontrollable spasmodic twitchings or "jumpings" of the legs, has been delivered, labour having come on prematurely. The fact is interesting in illustration of the law of augmented centric nervous irritability. The immediate provoking cause of the labour seemed to be a distressing cough which the patient caught a week before at Hastings. The commotion caused by the cough destroyed the harmony or balance of nerve-supply and demand, and the irritation, beginning under its influence, was propagated to that part of the cord which rules over the dynamics of parturition. When the nervous centres are in a state of exalted tension, irritation telling upon whatever part, of the brain through the emotions, or of the cord through reflex action, seems liable to spread and involve the whole cord. And if one part, as in pregnancy, be especially irritable, this part will be excited to its special action. Or we might express it in another way. We may imagine the spinal cord to be a conductor along which an impression made at any point is transmitted rapidly to the rest, testing and calling into action any part which is in an especially excitable condition.

Thus, as in the present case, cough excites labour; but under other conditions of special influence, as of blood-poisoning, or of proclivity from hereditary disposition, a cough might set up convulsion.

This law of the propagation of excitation from one part of the spinal cord to another part in a state of peculiar susceptibility, is admirably illustrated in a remarkable clinical experiment recorded by Harvey. "It seems to me," says our immortal physiologist, "on deep investigation, that the throes of childbirth, just as sneezing, proceed from the motion and agitation of the whole body. I am acquainted with a young woman who during labour fell into so profound a state of coma that no remedies had power to rouse her; nor was she, in fact, able to swallow. When called to her, finding that injections and other remedies had been employed in vain, I dipped a feather in a powerful sternutatory, and passed it up the nostrils. Although the stupor was so profound that she could not sneeze, or be roused in any way, the effect was to excite convulsions throughout the body, beginning at the shoulders, and gradually descending to the lower extremities. As often as I employed the stimulus the labour advanced, until at last a strong and healthy child was born without the consciousness of the mother." It is in the highest degree probable that in this instance there was albuminuria and uræmia. But how well must Harvey have been acquainted with the reflex function when we see him thus turning it to practical account to accelerate the course of labour.

But the practical unity of the cerebro-spinal axis is not seen alone in the action of physical peripheral irritation; it is equally demonstrated by the influence of the mind. It is familiarly known to obstetric practitioners that depressing emotions experienced during labour will often stop the "pains," and that a feeling of confidence and courage will impart to them activity. It is greatly through the blotting out of the sentiment of fear that chloroform acts so like a charm in promoting the healthy course of labour in women of delicate and susceptible organisation.

There is yet another illustration of the law we are now discussing which I may be excused for introducing. It is seen in that vivid sympathy which springs up between pregnant women. Thus, if a woman far advanced in pregnancy assist at the labour of another, she seems herself to catch every pain that seizes upon her suffering sister; and cases are known—I have recently seen one—where labour has in this way been actually excited. I have read somewhere, but I cannot lay my hand upon the reference, that the same thing is observed amongst pregnant mares and cows, so that those who have the charge of pregnant animals take care to separate from the rest any one which may be taken in labour.

I will now take up again the thread where I laid it down at the close of last lecture. Pursuing the method adopted at the beginning, I propose to work out the remaining relations of pregnancy and labour to convulsions, before discussing convulsion in the non-pregnant state.

Although there is no condition to parallel that marked by albuminuria in the proclivity to convulsion, yet we find other conditions which strongly predispose to similar outbreak. The very difference in nature of these conditions supplies further evidence of the truth of the fundamental law, that in pregnancy there is a special and intense accumulation of nerve-force.

EPILEPSY.

I shall best illustrate the relations of epilepsy to pregnancy by brief reference to cases.

CASE 1.—A young woman had had three labours at term and three abortions; all the children were born dead excepting one, and that lived only seven weeks. She had not, as far as could be ascertained, had fits before marriage. The history and present evidence of syphilis were distinct. She had been delivered a week. Convulsions had appeared during pregnancy, and fits were frequent after labour. She starts convulsively on any noise or movement, showing a highly sensitive state of nervous centres. No œdema; no albumen in urine. There is general debility.

CASE 2.—F. F——, aged thirty-two, has had three children and two abortions, the last child three years ago; is now seven months pregnant. She had several fits when suckling the last child; she had been only three days delivered when the first fit occurred; has had fits in increased frequency since being pregnant; she loses consciousness. She looks anæmic; pulse is small; œdema in feet and legs; venectasis of legs; palpitation. Urine contains no albumen; its specific gravity is 1014.

CASE 3.—G——, aged twenty-six, has one child one year and ten months old; came under my care at the London Hospital. She had previously been under the care of my colleague, Dr. Andrew Clark, who had advised her to wean after six months' suckling. The fits broke out a month after labour, lasting four minutes. Since weaning she has a fit once a month only. Has not menstruated since labour. Palpitation is very distressing; has "flushes to the head" preceding syncope; moaning follows, but no spasms now. Pulse is weak, increased impulse of heart, and slight anæmic sound.

She had intense inflammation of the neck of the uterus. Under treatment for this, and taking acetate of iron, she got much better. Fits returned when she left off her medicine, and were "kept off" by taking it. In three months she menstruated regularly. Having been free for some time, whilst menstruating she was struck by her husband; this brought on a fit, and the menstruation ceased suddenly. The fits then returned, with sickness and headache. Soon after this she was lost sight of.

CASE 4. *Anæmia from protracted lactation; epilepsy.*—M. S——, aged thirty-six, has had four children, the last eighteen months ago; is still suckling. Had a fit, the only one, last week; was two hours unconscious; was told she was "convulsed." Had nothing of the kind after previous labours; had suckled a previous child for two years. Has great pain under the left breast; short breath; some prolapsus and sub-involution of the uterus.

CASE 5.—A pluripara; had had epileptic fits at rare intervals when not pregnant. Had a convulsion just before

delivery. The urine was acid; specific gravity 1020; it contained no albumen, the full proportion of urea, and a little sugar.

CASE 6.—On the 9th June, 1869, I saw a young woman who had been married about a year. She had been delivered on the 2nd inst. of a live child after an ordinary labour. Next day she had an epileptic fit; the face remained much congested for three days, but there was no return of fits. The urine was not albuminous. At times she was delirious. On the third day after my visit there was a sudden attack of secondary hæmorrhage, from the effect of which she died. She was apparently a healthy young woman. No history of previous nervous disorder could be elicited; but her husband, a young man, was seized with a paralytic stroke a little time before her labour. The shock of this event had caused her considerable agitation.

CHOREA IN PREGNANCY.

CASE 1.—E. D——, aged twenty-two, came under my care at St. Thomas's Hospital. She has had two children; suckled both for twelve months; is now between three and four months pregnant. She had rheumatic fever at seventeen; chorea appeared three or four months afterwards, and reappeared with each pregnancy in the early months; she got better on quickening. The movements are all on the right side. After taking zinc and iron for a month she got much better as to choreic movements, but still complained of headache. There was still some systolic murmur.

CASE 2.—C. F——, aged eighteen, now seven months gone in first pregnancy; had a fright when three months gone; had chorea when a child, five years ago, not since until the fright; then the "jumpings" and chorea came on, and have continued ever since. She had typhoid some time ago; is anæmic. The uterine souffle is heard as a strong whistle in left hypogastrium.

The relation between a fit of ague and convulsion is too striking to be overlooked. Pregnancy and labour seem to exercise the same influence in causing a relapse as they do in the case of chorea.

CASE. — In 1863 I saw, with Mr. Corner, of Poplar, Mrs. W——. She had had several children. She had had ague in more or less distinct form for two years. She was delivered five weeks ago, and is suckling the child, but the milk is not copious. She seemed doing well, when five days ago she was seized with a marked ague-fit. This left her much prostrated; appetite impaired; heart's action feeble; no intumescence of liver or spleen. We advised removal to high gravelly soil. She took quinine, then cobweb, which Mr. Corner said was followed by marked benefit.

If we now analyse these cases, we find, amongst other lessons which they teach, the following:—

1. There is the fundamental state of nervous tension or erethism due to pregnancy and labour.

2. There is a degraded state of the blood, often vaguely called anæmia, but which is more strictly a form of toxæmia.

3. In some cases to a degraded state of the blood is added a morbid diathesis, which in all probability involves a peculiar organic modification of the nervous centres.

4. Then there comes an emotional or physical shock, or a peripheral irritation, which, acting upon a system prepared to explode, determines the convulsion.

Thus in Case 1 there was the syphilitic diathesis—a condition well known to be capable of evoking or leading up to epilepsy in men. But in this case labour was necessary to determine the convulsions.

In Case 2 epilepsy followed on the exhaustion produced by suckling. It is in cases of over-suckling that we see most strikingly the influence of exhaustion—say, of anæmia. The thin blood, deficient in red globules, can hardly afford proper nourishment to the nervous centres. But the term "anæmia" or "spanæmia" imperfectly describes the kind of blood-impairment found in these cases. It would lead us away too far from our present theme to examine the reasons which seem to me to prove that a state of pure spanæmia, or simple dilution of the blood, can hardly exist. Blood which, from its poverty, is incapable of nourishing the organs, and of stimulating them to the adequate performance of their functions, necessarily soon becomes contaminated by excrementitious matters. Spanæmia then implies toxæmia. Excretion is always imperfectly performed. Almost any animal poison in the blood seems to possess the property of unduly exciting the nervous centres. There is hardly a fever which does not manifest evidence of cerebro-spinal irritation, by delirium, or by that form of convulsion known as *subsultus tendinum*. The poison of spanæmia is different from the specific poisons of fevers; but, like them, it irritates the nervous centres, and, like them, it is likely to cause various irregular, involuntary muscular actions, recognised as spasms, cramps, twitches. To return, then, to our case of epilepsy provoked or evoked by over-suckling. It is a type of a considerable class. The mother goes through perhaps one or two pregnancies and lactations without serious ailment; but under repeated wear and tear, as in this case, at the third lactation, she breaks down. The blood is degraded, the nervous centres are ill-nourished; but, the function of lactation going on, there is maintained an inordinate centric irritability. Under these conditions, convulsion is near at hand. If there be present a convulsive diathesis, it is pretty sure to break out. If she have at any time been "subject to fits," it is almost certain that they will reappear now. That convulsions should occur, even where they had never occurred before, and where we can trace no evidence of convulsive diathesis, affords very strong presumptive evidence of the independent adequacy of the conditions we are discussing to produce them.

It may be objected that when pregnancy and labour are past, there is no longer equal necessity for that preponderant activity of the cerebro-spinal axis which I have invoked. But there are abundant facts to prove that lactation, which, like pregnancy, imposes upon the mother the double duty of supporting two beings, really does imply a corresponding increase of nervous energy. Nor is this all. Throughout this work, of itself sufficient to tax the mother's powers to the utmost, the ovarian stimulus is commonly acting. In married women, especially, the ovaries can hardly be kept in abeyance. They are always struggling to renew the cycle of the function of reproduction. The effort at ovulation frequently determines menstruation in spite of lactation; and even where the blood-flow—the outward manifestation of ovulation—does not occur, there is reason to believe that ovulation more or less complete goes on. This state, added to the excitation of the sexual act, causes a constant renewal of exaggerated cerebro-spinal irritability. Hence it is that we see, in some cases, a periodical recurrence of epileptic fits, although there may be no visible menstruation. Illustration of all this is seen in Case 3, in which epileptic fits recurred monthly.

It is remarkable, as bearing upon this argument, that protracted lactation apart from ovarian excitement is not nearly so likely to lead to nervous exhaustion or to convulsion or insanity. Thus it is no uncommon thing for women who lose their husbands whilst they have a child at the breast to go on suckling for an indefinite time. Concentrating all their emotional and other nervous expenditure upon this vicarious duty, the ovaries are kept in subjection; and there is no excessive development of spinal irritability. Thus I have known poor women, badly fed, hardly worked, continue to suckle for two, three, and even seven years, exhausted, it is true, in strength, but free from convulsion or insanity. The nervous diathesis was wanting.

But it is in pregnancy, when the tension of the nervous centres is at the maximum, that we see the most striking proclivity to epilepsy. I do not know a recorded case in which this is more forcibly shown than in one which I saw several times with Dr. Sharpe, of Norwood, the history of which he has drawn up for me. It is altogether one of the most interesting I have ever known; and I wish I could read it in detail. The main features are as follows:—

Mrs. T——. Many of her blood relations were strumous or phthisical; her grandfather died of apoplexy; her father had hæmoptysis, and is dying of Bright's disease; her elder brother had been epileptic from birth, and died at thirty-two. She herself was healthy, although she had never menstruated when she married at eighteen. Her first pregnancy ended in labour at term, and she suckled for ten months, when menstruation returned. During the next five years she aborted four times, generally at eight or ten weeks, suffered much from hæmorrhage and great prostration, and great mental anxiety. The sixth pregnancy went to term; she nursed for eleven months, when she became pregnant again, and aborted at six weeks. Two years after this, being pregnant again, six weeks after a day of much fatigue she had a fit in the night while asleep. She was

unconscious for a long time; had a succession of fits; aborted after two or three. She was ten months before she recovered from this illness. During these ten months she menstruated regularly, having a slight fit before each period, on recovering from which she would find herself unwell. At the end of these ten months she was pregnant again, and at once "took fits," and had them frequently during the whole pregnancy, which lasted nine months. When labour came on, fits came on. She had no fits after this child was born. She nursed it for thirteen months, having plenty of milk. For three years there was no pregnancy, and she remained very well. Then, being pregnant for the tenth time, she had no fits; was delivered at term; was nursing, when at the end of seven months she had a fit, and found herself pregnant for the eleventh time. During this pregnancy she had many fits at varying intervals, went to term, had no fit during labour; but they broke out immediately afterwards, severe and protracted, she being semi-comatose between. She nursed for twelve months. Pregnant for the twelfth time, she aborted at six weeks, had much hæmorrhage, and fainted, but "had no fits." This account Dr. Sharpe, in my opinion, rightly doubts. He suspects the two "faints" were two fits. In about eighteen months after this she was pregnant for the thirteenth time, went on very well for three months, when she "quickened," having had the day before a very severe fit. A fortnight after this she found her right leg was paralysed. She took to bed, having fits from time to time until she was five months and a half gone, when the fits became very severe, and the coma so prolonged as to cause great anxiety; the paralysis of the leg continued. Labour was induced by rupturing the membranes. She had no fits during the labour or in childbed. She continued pretty well, except that the paralysis remained, and is now pregnant for the fourteenth time. She had another slight fit at the beginning, one at the end of four months, and one at the end of the fifth month.

Such is the record, not yet complete, of this "strange eventful history." It illustrates, in several repeated series of experiments instituted by Nature, almost all the points upon which I have dwelt.

1. There was probably an hereditary predisposition to nervous disease. But Dr. Sharpe specially records that this woman is the reverse of hysterical; she is a woman of surprising bodily and mental energy, of steady, determined will, ruling her own household firmly, and, having still energy to spare, rules those of her sons-in-law as well.

2. She never had fits unless when pregnant, except during the ten months between her eighth and ninth pregnancies, when she had a slight fit at each monthly period.

3. The menstrual or ovarian nisus produced fits, shown by periodicity of recurrence during lactation and pregnancy.

4. She had fits during the climax of coition, but never except when pregnant. This last fact or experiment affords striking evidence of the increased efficacy of irritation during the inordinate spinal erethism of pregnancy.

5. The increasing preternatural irritability of the spinal cord is manifested in the repeated abortions following the first pregnancy.

6. These abortions and the protracted lactations induced a gradual blood-deterioration, the effect of which culminated, after six years of reproductive troubles, in the first epileptic fit during the nervous tension of pregnancy.

The urine, examined at four different times, never showed any albumen. The case was one of pure epilepsy.

Although, as in this case, epilepsy will frequently excite abortion, it is not nearly so likely to bring on labour as eclampsia, showing that the blood-poison in the latter case is a special cause in augmenting the irritability of the nervous centres.

I have now to offer some observations upon *vomiting in pregnancy*. The morning sickness of pregnancy is proverbial. It requires no treatment. Up to a certain point it even seems to fulfil a useful physiological purpose. It is usually the first evidence of the cerebro-spinal erethism produced by pregnancy. Its action may be compared to that of a safety-valve discharging the superabundant nerve-force, which might otherwise result in convulsion, abortion, or other mischief. Its constant occurrence in the morning seems to imply that at this time there is a maximum of central nervous irritability, so that comparatively slight peripheral causes will then act with more effect. There are many facts which lend support to this hypothesis. The immediate irritating cause I believe to be the stretching of the uterine muscular fibre under the eccentric pressure of the growing ovum, and the turgescence of the uterine vessels. In many cases, after three or four months the balance is restored, and the vomiting either ceases or is so moderate as to be easily tolerated. It is remarkable, however, that in not a few cases vomiting appears to set in almost from the moment of conception. These cases may be explained by the facts—(1) that conception has taken place, as it most commonly does, at a menstrual epoch—that is, when there is an exalted central nervous tension; (2) by the stimulus or irritation of coition.

In some cases I have seen, the vomiting was so distressing, so prostrating, within the first three months, as to bring the patient to the most critical position, and even to prove fatal.

In other cases, the vomiting, less urgent at the beginning, being continuous, and increasing in severity, brings the patient into danger at the fourth, fifth, sixth, or seventh month.

In yet other cases, the first half of pregnancy may have been got over without much distress. The vomiting may have even stopped altogether; when, about the sixth or seventh month, it becomes uncontrollable, quickly exhausting the patient, even threatening her life.

These three groups of cases demand separate consideration. The first group, that comprising cases of severe vomiting within the first three months, includes cases of women who have borne several children, as well as primiparæ; although probably the primiparæ are the majority. In these, the preponderating condition is the extreme convulsive tension of the nervous centres. The subjects are generally "nervous," susceptible to emotional and physical impressions. In some, there are predispositions of a kind similar to those which operate in the production of convulsions. In some, and this may be especially predicated of those women who have already borne children, there is probably blood-deterioration. Sooner or later, indeed, as we shall see, blood-deterioration surely supervenes; but the influence of this factor does not appear to be necessary to produce vomiting in primiparæ in the first month.

In the second group, including cases of continuous vomiting increasing in severity, the initial conditions are those which mark the first group. But very soon another condition arises: obviously, continuous vomiting implies impaired or arrested nutrition. The influence of this seems to be to increase the irritability of the nervous centres. It is a matter of observation that if the strength can be roused the susceptibility is diminished. But this is not all. The condition is not simply the negative one of want of nutrition. If food be not supplied from without, the starved system feeds upon itself. Absorption goes on actively. The proceeds of tissue-change find their way into the blood, and empoison it. At this point the danger is extreme. The blood-poison still further increases the irritability of the nervous centres; it oppresses the brain; delirium supervenes; and utter prostration is at hand. Every fit of vomiting acts as a shock, and leaves the system more open to the next attack. At this point the slightest emotional impression, the gentlest touch on the skin, the offer of food or drink, will act as they will upon the sufferer from tetanus. At this stage diarrhœa is not uncommon. It bears further evidence of toxæmia. The indications of danger are—extreme emaciation; a pulse small, easily put out, exceeding 130 in the minute; hollow, staring eyes; hippocratic aspect; and delirium. I have not seen a patient recover in whom the last symptom had persisted for a few days, supervening on the rapid pulse. The vomiting may now subside; even premature labour may take place; but the patient will sink notwithstanding.

In some cases, and the observation applies particularly to these first two groups, the urine is albuminous. This was pointed out by Sir James Simpson. Where this complication exists the case bears close affinity to the class of albuminuria or uræmic eclampsia. Or the albuminuria may be a secondary result of the vomiting brought about by the poisoned condition of the blood. But the fact is that this complication is exceptional, and therefore not essential.

In the third group of cases—that in which the vomiting becomes obstinate in the latter stages of pregnancy—the etiology is sometimes pretty clear. For example, I have

seen cases in which, in the latter half of pregnancy, the uterus has rapidly, almost suddenly, undergone excessive distension. The cause of distension has been the undue secretion of liquor amnii or the growth of twins. At this time vomiting has set in. The explanation I would offer is this:—Normally, the uterus *grows pari passu* with the development of the embryo. The adaptation is so well balanced that there is no strain. But if the contents of the uterus be suddenly augmented, the harmony of correlation is destroyed. The uterus cannot suddenly grow to keep pace with the eccentric pressure within. Its fibres are stretched, in some cases torn, and vomiting results. Stretching of the uterine fibre is enough to cause vomiting, even where there is no pregnancy; *a fortiori* it is enough when the irritability of the nervous centres is exalted by pregnancy.

In these cases I have seen the vomiting cease almost abruptly, and recovery commence from the moment the uterine tension was taken off by puncturing the membranes and emptying the uterus. In other cases there is unmistakable evidence of blood-poisoning. Jaundice attends, sometimes preceding, sometimes apparently induced by the vomiting. Whenever the blood is charged with matter which ought to be excreted by the liver or kidneys, vomiting is pretty sure to be aggravated. The most striking example of cholæmic vomiting is that connected with acute atrophy of the liver.

Again, I have seen cases of obstinate vomiting where a dead fœtus or a diseased placenta probably supplied the poisonous element. Perfect relates a case of obstinate vomiting for several days during the retention of the head of the fœtus in utero. A retained placenta, or clots giving rise to the invasion of the blood by septic matter, cause vomiting. This phenomenon is, indeed, a frequent result of the absorption of septic matter during childbed.

In a case that terminated fatally through exhaustion and irritative fever, the patient had been addicted to drinking. I shall again have occasion to refer to the pernicious influence of this habit in increasing the disposition of women to vomit.

It will now be useful to trace roughly some of the common features of resemblance or of relationship between the different forms of convulsive disease which occur in pregnancy. In this comparison or analysis we ought to include the relationship of syncope, vertigo, migraine, apoplexy, paralysis, delirium, insanity. They often form links of one chain or of different chains. Syncope and vertigo should be studied in their frequent relations to epilepsy; apoplexy in its occasional relations to uræmic eclampsia; paralysis in its relations with apoplexy and epilepsy; and insanity in its relations with epilepsy, eclampsia, and chorea. A vast field of inquiry is here before us. I scarcely dare to touch it. But I think I see enough to justify me in asserting that all these diseases, or symptoms, or pathological results, must be studied together in order that their true individual and cognate significance may be understood. Leaving aside the deeply-interesting subject of puerperal insanity in its more usual forms, I may call to mind that all the convulsive diseases may culminate in mania or dementia.

What is it, then, that determines epilepsy in one case, vomiting in a second, chorea in a third, tetanus in a fourth? We must of necessity invoke a peculiar antecedent condition of the nervous centres, lying dormant, probably quite unknown or unsuspected, until it declares itself under the magical ordeal of pregnancy. In the case of epilepsy this is almost certainly so, and this is proved by those cases in which the subject had previously been known to be epileptic herself, or to have come of epileptic parents. That pregnancy should reproduce epilepsy in those known to be predisposed to it is strong presumptive evidence that there has been a similar predisposition, although hitherto latent, in those in whom epilepsy appears for the first time during pregnancy.

In the case of chorea this dormant morbid something is even more clearly proved. In a considerable majority of the cases in which chorea has broken out in pregnancy the disease had existed in childhood. Pregnancy could only be regarded as a renewing cause.

But the postulate of an antecedent condition is most indisputably settled by the case of ague. We cannot conceive the possibility of ague being evolved solely out of the conditions of pregnancy. We know that other debilitating causes may also act in reproducing ague in persons who have once been under the influence of the paludal poison.

But it is not so clear that an antecedent predisposing cause is necessary to the production of eclampsia or obstinate vomiting or tetanus. In some cases of eclampsia, at any rate, it has been impossible to trace a history of convulsive affection, or to establish hereditary taint; whilst, in many instances, the convulsion has begun and ended with one particular pregnancy, the recovery being perfect, and leaving no mark of special nervous diathesis behind. Obstinate vomiting, I believe, is more common in women of known so-called nervous or susceptible temperament. But I have not been able in some cases to make out any presumable nervous proclivity.

The influence of loss of blood in producing convulsions has often been dwelt upon, and an essential factor has been thought to be found in anæmia. I am persuaded that clinical observation will not support this hypothesis, at least not in its general application.

The convulsive movements sometimes, but by no means constantly, observed in subjects dying from hæmorrhage differ materially in character from the ordinary epileptic fit. The observations of animals bled to death have only a limited application. Yet it appears to be chiefly from such observations that the advocates of this theory have drawn their conclusions.

Probably few practitioners who do not practise obstetrics, and not even, it appears, many of these, have seen several cases of bleeding to death. It has been my fortune to see a considerable number. In most of them death was preceded by general tremor, a kind of universal shuddering; consciousness was sometimes not abolished, and in none was there trachelismus or congestion of the face. There was often vomiting, always distressing dyspnœa, and the pulse was rapid, scarcely felt or even extinct. These signs constitute a picture differing essentially from convulsions.

In the following case the convulsion more nearly resembled epilepsy than usual:—

A woman pregnant with her eleventh child had profuse flooding from placenta prævia. Two or three convulsive fits followed the hæmorrhage. Next day she was very prostrate, but there were no more fits; no abdominal pain, but still frontal headache. On the fourth day her tongue continued colourless, and there was still intense frontal headache. She recovered. Here possibly there existed the epileptic diathesis.

In all these convulsive disorders the nutrition of the nervous centres is affected by some abnormal state of the blood; but the abnormal state is not the same in all. In epilepsy, in chorea, in hysteria, and, up to a certain stage, in vomiting, the alteration probably consists chiefly in that degradation which results from the impoverishment caused by excessive demand, and in the empoisonment of defective excretion. In eclampsia, supervening upon this, there is undoubtedly a special empoisonment by the elements of urine.

For the evolution of any one of these convulsive disorders the development of a peculiar tension of the vis nervosa seems to be a fundamental condition. For, unless pregnancy supervene to produce this peculiar condition, neither epilepsy, eclampsia, vomiting, nor chorea, would, in most cases, ever appear.

Intimately, I might say inseparably, associated with exalted reflex irritability, is a peculiar tension or irritability of the psychical organs.

Convulsion may be determined by irritation starting either from the centripetal nerves or from the brain.

Marshall Hall's contention that convulsion may also have a centric origin, must, I would venture to submit, be received with some qualification. It is very true that some poisons carried in the blood to the spinal cord, as well as to the rest of the body, will so exalt the irritability of the cord that convulsions are easily determined. But it may be questioned whether the *primum mobile*, the exciting cause of the convulsion, starts from the cord. Strychnine will enormously exalt the central irritability; but so long as the animal is kept perfectly free from emotional or peripheral irritation there may be no convulsion. This, Dr. Marshall Hall has shown me himself.

Strychnism resembles the excessive centric irritability of pregnancy; and, more nearly still, that greater irritability seen in tetanus. And in strict connexion with our theme,

we must not forget that true tetanus is one of the convulsive diseases of pregnancy. In hot countries, as in the West Indies, in India, and in the Southern States of America, it is not uncommon in connexion with abortion and labour. Mr. Waring* recorded 232 cases observed in India. Its occurrence has generally been thought to be sufficiently explained by comparing the condition of the uterus after labour to a surgical injury. But this, according to our view, is only a partial explanation. It accounts for the source of the peripheral irritation only.

The *tetanic state* consists in intensely exalted irritability of the spinal cord, a condition which may be regarded as a morbid exaggeration of the normally increased irritability of pregnancy. I have often seen in labour evidence of such extreme reflex and emotional irritability that I have expressed it to myself as tetanoid. But I have not seen a case of true tetanus in a pregnant woman which I could identify with what I have seen of tetanus after surgical operations, or of so-called idiopathic tetanus. Sir James Simpson† collected twenty-eight cases of tetanus connected with abortion or labour. In some of these there was no unusual lesion; in some there had been hæmorrhage; in some there had been plugging of the vagina to arrest hæmorrhage, and this has appeared to cause peculiar irritation. One observation made by Simpson is undoubtedly true. It is, that tetanus in women is extremely rare independently of pregnancy. Dr. Wiltshire has related‡ two cases, both in pregnant women. Of the twenty-eight cases collected by Simpson, only six recovered. Both Dr. Wiltshire's died. Here I am tempted to mention a case of tetanus induced in an infant by whooping-cough. It will serve as an illustration of the influence peripheral irritation brought to bear upon the nervous centres of a child, naturally irritable, and brought to still higher tension by a morbid poison, may exert in causing convulsion.

Whooping-cough in an infant inducing tetanus.—On Jan. 16th, 1866, I met Mr. Giles, now of Henley-on-Thames, on the case of a boy aged nine months. He had been weaned two months, and was taking cows' milk and Robb's biscuits. He had had whooping-cough three weeks, having taken it from his mother. During the last three days a singular train of nervous symptoms appeared: first trismus, then emprosthotonos, the hands touching the feet, then the body arches back into opisthotonos. The fits seem the first expression of the impulse to cough, the coughing coming on soon after the fit. Anything in a spoon excites cough or fit. The child is not much wasted, but there is some degree of anæmia; the bowels have been out of order, the stools pale. Calomel-and-rhubarb has corrected this condition. He has had belladonna. We recommended goat's milk, solution of perchloride of iron, and gave a favourable prognosis. The child recovered.

Such a case must be studied in connexion with the "*trismus nascentium*." It proves very clearly the intimacy of the association between whooping-cough and convulsive diseases.

The facts related and the propositions deduced from them have a valuable application to the pathology of convulsive diseases. It may be said that the relations of these diseases to pregnancy bring the accuracy of various theories as to the essential conditions of these diseases to the test of clinical experiment. Many are the theories, and discordant, of the pathogeny of epilepsy, of chorea, of tetanus, and of hysteria. Now, be these essential conditions what they may, anæmia, congestion, change of structure of the nervous centres, embolism, pregnancy must produce them all, and all must vanish suddenly with labour. Are these conditions so created and so disposed of? Great as I believe the pathogenic potency of pregnancy to be, I cannot go so far as this. We cannot, at any rate, admit that a gross structural change in the nervous centres is of the essence of epilepsy or chorea, when we see complete recovery ensue as soon as the pregnancy is over.

We are, then, driven to conclude, with Voisin and others, that the visible alterations found in the brain and cord, in persons who have died of epilepsy or chorea, are consecutive on, not antecedent to, the disease.

These structural alterations, I submit, are more strictly connected with the ulterior superadded symptoms of the disease than with the initiatory or proper symptoms. For example, when the disease has long endured, when the fits have become frequent and severe, the brain commonly shows signs of impairment, and exhaustion, paralysis, dementia, or mania is the result. In a memoir I wrote some years ago on "Chorea in Pregnancy,"* I adduced reasons for concluding that the graver symptoms—the paralysis, the mania, death—were produced by the repeated shocks of convulsion.

No one who has watched a case of puerperal convulsions, or of obstinate vomiting, or tetanus, or who has himself experienced the torture of sea-sickness, can have failed to observe how each repetition of the fit weakens the power of resistance, rendering the nervous centres more and more susceptible to those impressions which started the affection. This increasing susceptibility is obviously the result of shock, aggravated no doubt by exhaustion from want of food.

In the case of tetanus it can hardly be questioned that the fatal prostration is almost purely the result of the repeated shocks. The blood-poison, if any exist, and I believe it does, mainly acts by increasing central nervous irritability; it scarcely complicates the problem; and the mind often remains singularly clear. In uræmic convulsions, again, notwithstanding the complication with blood-poisoning, the effect of shock is clearly seen in the exhaustion following the fit, in the general muscular resolution, in the relaxation of the sphincters, and in the gradual return of nervous power during the intervals, under the influence of rest. I have seen almost sudden death in labour which could be ascribed to no other cause than the shock of pain, and the convulsive action of the uterus. In some cases of paraplegia arising in labour it seems reasonable to attribute the paralysis to exhaustion or shock upon the spinal cord. It is certain that some of these cases cannot be accounted for on the theory of pressure upon the nerves in the pelvis.

The increasing or progressive influence of successive shocks partly explains what is comprised under the idea of "habit." "Habit" is a vague term. In the case of convulsive disease it implies—first, increased susceptibility to external and to emotional impressions; second, altered periodicity in the renewal of nerve-force. This increased susceptibility seems to be produced by repetition of shock or fit. We have one very interesting practical application of this law in obstetrics. When we induce labour prematurely in a woman for the first time we often find the nervous irritability insufficient to complete the labour promptly, and it becomes desirable to supplement defective natural power by operative aid. But in each succeeding pregnancy the nervous centres respond more and more easily to the artificial provocation, so that when labour has been brought on three or four times at the same stated period of pregnancy, it seems as if that stated time had become the normal term of gestation. Such is the altered periodicity in the preparation of the requisite nerve-force produced.

It is greatly by the influence of shock that I would account for the cerebral disorder which so often attends the progress of puerperal convulsions, of epilepsy, and of chorea. The fits act as repeated shocks which stun the nervous centres. These shocks are equivalent to concussions. The *ictus epilepticus* is as real a blow as the apoplectic stroke. They exhaust and divert the nervous force, and after a time impair the nutrition of the nervous substance.

In the case of chorea proceeding to mania, we have to note that the cerebral disease is almost always *secondary and progressive*. In cases in which the chorea is evoked by fright some mental disturbance may be noticed at the onset, whilst in other cases there may at first be little or no such disturbance. But soon irritability of temper, a certain peevishness or waywardness, a loss of balance, impairment of memory, sometimes of articulation, follow. An aspect of stupidity betrays a real loss of intelligence. At first these defects are slight, but they gradually increase in severity, occasionally to the extent of ending in delirium or furious mania.

In cases of puerperal mania breaking out after labour, where there has been no convulsion, it may seem that some other factor than shock must be invoked. In some of these cases there is albuminuria: that is, there is blood-poisoning; and this may be taken to be the chief factor. But in other

* Indian Annals, 1855.
† Selected Obstetrical Works, 1871.
‡ Obstetrical Transactions, 1872.

* Obstetrical Transactions, 1868.

cases there is no albuminuria. But in all there is the shock of labour, with its attendant exhaustion, its severe physical and psychical revolution, acting upon a nervous system wrought up to a climax of irritability. It seems to me that convulsions, collapse, insanity, are not, indeed, interchangeable or convertible, but that the issue in any one of these conditions is determined by idiosyncrasy, or antecedent peculiarity existing in the nervous centres.

ON CHOLERA IN INSULAR POSITIONS.

BY WILLIAM R. E. SMART, M.D., C.B.,
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(*Continued from p. 424.*)

SUCH, then, is the evidence on this important topic derived from insular positions, wherein epidemics of cholera are ordinarily of short duration; and it suffices to raise the pregnant question whether a similar concomitancy can be traced where recrudescences of cholera break out in unhealthy continental provinces.

Insular positions are exceptional, in so far that the surrounding and intervening spaces of water can only be bridged across by ships or boats, and the limits of infection of them cannot be defined until there is an absolute certainty of the data concerning ships, as to the longest period after leaving infected localities they will carry in them not merely the spasmodic type of the disease but the tendency to diarrhœal complaints.

Perhaps the longest period yet noted was in H.M.S. *Apollo* in 1849, which was infected at Cork and presented the last case of cholera after fifty-five days when near to Rio Janeiro, a distance of 4500 miles of ocean track, beyond which, it may be inferred, she was still capable of reproducing the disease so long as a diarrhœal tendency remained in her. With such distances of time and place as this one instance affords, all other recorded instances are insignificant, especially when steamers are concerned.

Again, nothing is known with certainty of the power to infect which resides in the walls and in the pent-up holds of ships that have undergone epidemics or have been in infected localities. The outbreak of the disease in a port subsequent to the arrival of such a vessel lays her open to gravest suspicion, as in the case of the outbursts in Fogo in 1855 and in Guadaloupe in 1865, as to whether the presence of a generally unhealthy condition in a ship from an infected locality may not become the efficient cause of an outburst in an island. The question of subsoil water impregnated with cholera-germs as a factor of the disease is inapplicable to ships, unless it be referred to the dampness of her timbers; and so with regard to atmospheric conduction as a cause, it can concern only that which may have been pent up in her holds, either from an infected port, or generated in her by the actual presence of the disease. Casting these aside, it can only be assumed that either the persons or the clothing of the crew in the bridge which connects insular positions with infected localities, are the only potential means of conveying infectiousness into islands, and it remains still to be proved what time must elapse before these shall become inert amidst bodies of men or in localities once infected.

This forms, however, an important item in this inquiry, as close to which there may be cited the instance noted by Dr. Barraut at the immigration depôt of Mauritius in 1864, when the vigorous healthy coolies lately arrived from Calcutta became infected by spasmodic cholera, after their admixture with the time-served coolies about to depart from the island, among whom there was no patent display of choleraic disposition, although it was obvious that the newly arrived became fatally infected by intercourse with them. It may be inferred that the old residents had lost their susceptibility, and had been rendered incapable of renewing choleraic action, although still capable of bearing among them the cause of death to others. As it was distinctly noted by Dr. Barraut that the disease appeared thus, in newly arrived men, thrice on admixture of the coolies, and ceased each time on their separation, it was perhaps rightly attributed by him to an immediate contagion of person, rather than to a mediate infection of place, as showing that personal contagion and personal susceptibility must coexist for an epidemic. This remarkable feature has been illustrated differently in Assam, where the tea plantations are worked in a similar way to the sugar estates of Mauritius, by coolies hired in Calcutta. In the sixth report of the Sanitary Commissioners in India it is stated at page 69, on the authority of Dr. White, that in 1864 these immigrants arrived at the rate of six hundred a month, nearly every steamer having cholera on board, and no restraints were imposed on their landing at once. Dr. White remarks: "I then observed that, although patients were removed, actually suffering from cholera, to the various tea-factories in the neighbourhood, it was never communicated to the old coolies. In the gardens to which the cholera patients were taken I never heard of an instance of any of the old labourers being seized; at times some of the new party of coolies, who disembarked in health, would be attacked on arrival at the gardens, but never any of the coolies who had been previously there." In this instance the old residents appear to have been incapable of renewing choleraic action, even when presented to them in the form of fresh importation. It is observable in both instances that the old residents had lately undergone epidemics, and were themselves no longer susceptible of the disease. In the first instance they infected the newly arrived healthy men; while in the second the arrival of infected men was barren of results upon the old residents, who, as it were, proved acclimated to choleraic causes.

Applying such data to the intercourse of ships with islands, it would appear that an arrival, in which the disease may have passed away, might cause infection of healthy persons who visit her, and that a really infected ship might not be reproductive of the disease in an island that had already undergone lately an epidemic course, which would explain some of the occasions on which intercourse has not been succeeded by an outburst, as well as others in which the disease has been introduced quite unsuspectedly.

The course of epidemics in islands bears very strong evidence to the theory that the seasons have influence in directing the progress of infectious cholera, if they do not even modify or weaken the potential force of the specific cause.

It has been competently noted in eastern tropical regions, after Dr. John Macpherson had proved it in as far as concerns Calcutta, that the relative strength of epidemics of cholera is greatly influenced by the seasons of the year. He found "in 107,295 fatal cases that three hot and dry months produce fully four times as many deaths by cholera as three hot and wet months, and about twice as many as three cold and dry months, while the cold and dry months slightly exceed the transition months."

I believe that this would be found to hold equally good with regard to the West Indies, if there were equally reliable statistical data producible. Wanting these, an approximation is arrived at by observing the dates of the outbreak and decline of the insular epidemics, and comparing them with the course of the seasons in the West Indies. It may be said that the dry cool season extends from November to April inclusive, forming the healthy season of the climate; and the hot moist season from May to October inclusive, having a short hot dry season, with sultry mists in lieu of rain in June and July and part of August; the heaviest rainfall occurring in May and October at the change of the two great seasons, which varies somewhat with the more southern or northern position of the several islands; cyclones, with electric storms, being unknown in the southernmost. Comparing the variations of the epidemic force with the seasons, it is seen that the periods of activity fell between September, 1850, and April, 1851; between September, 1852, and February, 1853; between December, 1853, and January, 1855, comprising the year 1854 of most general diffusion and of greatest intensity, but dormant in it through March, April, and the first half of May, the season of transition and of the early rains; severe again from that date until the middle of October, when it ceased in the windward islands, and broke out afresh in one of the leeward islands that had been spared early in the year, and lasting there to the end of January, 1855, having shown its intensity in the dry seasons. In the next long dry season it appeared again in Porto Rico, till then free, and con-

tinued in it with varying force through the year 1856. On the other hand, the typical periods of rest were from April, 1851, when it ended in Jamaica, till September, 1852, when it broke out in the Bahamas; from February, 1853, when it ceased there, till it appeared in Nevis and St. Thomas and Jamaica in December, 1853; from March, 1854, when it ceased there, and burst out in Barbadoes in May, the Grenadines and Trinidad being subsequently infected until October; shortly after that reappearing in the north in St. Kitt's, which it occupied through the next dry season, and ceased in January, 1855; and, lastly, with the intermission of the entire wet period of the year, it visited Puerto Rico in December in the early part of another dry season.

This remarkable series of sequences of epidemic intensity and intermediate rests observed in a long chain of islands are, to my mind, conclusive in proving the truth of the proposition, that cholera epidemics show a very remarkable relation to the seasonal phenomena in hot climates; the dry season being that of epidemic intensity, and the wet season that of dormancy or of comparative freedom from activity.

A strongly pronounced feature in this correlation of cholera epidemics and the dry season of the Antilles is its contrariety to that which exists between the natural epidemic disease of the region—yellow fever—and the seasons; the period of its development commencing with the early hot moist season in May, attaining its climax in July and August, and ceasing in October, when the long dry cool season sets in; whilst cholera commences towards the end of the hot moist season, reaches its climax, and exhausts its epidemic force during the dry season.

These observations have reference to the relations of cholera epidemics to meteorological phenomena. I shall now proceed to examine their relations to restrictive measures by means of quarantine and lazarets.

The history of cholera epidemics in insular positions offers, it is true, negative instances in which the disease has not prevailed after free intercourse with infected places, and others in which it has broken out in spite of quarantine restrictions, so that some difficulty arises in asserting beyond question that these are certain means by which islands are to be rendered secure from invasion. There are, however, so many examples of epidemics arising subsequent to the arrival of infected vessels, or of those from infected localities, as to place it beyond question that the disease was imported from without. Thus, the Mauritius was infected from India in 1819 and 1856, and Bourbon from it in 1819, and from Africa in 1859; Madagascar and the Comoros from Africa in 1859 and 1869; Sicily from Italy in 1837 and 1867; Malta from Sicily in 1837, from Tunis in 1850, from Egypt in 1848 and 1865; Gozo from Malta in 1837, 1850, and 1865; the Grand Canary from Havannah in 1851; Fogo in the Cape Verds from Italy in 1855; Madeira from Lisbon in 1856; the Bahamas from New York in 1852; Nevis and St. Thomas from England in 1853; Jamaica from Chagres in 1850, and from St. Thomas in 1854 and 1855; the Grenadines from Barbadoes in 1854, and Guadaloupe with its minor dependencies from France in 1865, to which may be added St. Nicolo and St. Antonio from St. Vincent in the Cape Verd group in 1856. These instances suffice to show at least that the neglect of quarantine has been followed by the most deplorable results.

Other instances may be cited to show that the presence of vessels in port undergoing quarantine has been the antecedent of outbursts on shore, as at Palermo in 1837, Malta in 1837, 1848, 1865, and 1867; and Trinidad in 1854.

A series of sequences so numerous as these, must have, I consider, much weight in the decision of that most important question whether the importation of cholera is preventable by quarantine, inasmuch as they show that without it, and even during its performance within a limited radius, there is a great liability to its epidemic outbreak in insular positions which, from their geographical conditions, present the best of all circumstances for testing the efficiency of exclusive measures.

Looking around for instances in which islands have seemed to be protected by quarantine, which many regard as positive evidence to that effect, but which we will assume to have been only remarkable instances or coincidences of quarantine and of exemption—a *post hoc* rather than a *propter hoc*,—we find that Bourbon is said to have escaped in 1856 and in 1862, through keeping up quarantine against Mauritius from which it had been infected in 1775 and in 1820, before quarantine for cholera was thought of. Another French colony in that ocean—Mayotta, one of the Comoros—holding a peculiar relation to the labour-traffic between Africa and Bourbon, but keeping up a rigid quarantine in epidemic seasons, was unaffected by the African epidemics of 1859 and 1870, when other islands of the same group, under Arab government, were infected, and Bourbon itself underwent a severe invasion in 1859, through its labour-traffic with Africa.

Among the islands of the Mediterranean, Sicily, the greatest of them, was exempt in 1848, 1850, and 1865, concurrently with rigid quarantine restrictions, when Malta, holding by a very easy quarantine, was always infected. Sicily and Sardinia escaped till 1867, while Italy was scourged from 1865, through 1866 and 1867. On the other hand, in 1867, when Sicily underwent an epidemic of it, Malta, having recourse to strict quarantine with Sicily, escaped notwithstanding its previous proneness to the disease.

In the Atlantic, the Grand Canary suffered very intensely in 1851, but every other island of the group was exempted, all communication with it being cut off. This affords the very strongest of contrasts with what occurred in the Cape Verd group in 1856, when the disease appeared in St. Vincent—a packet coaling station,—and two others of the group, St. Nicolas and St. Antonio, were speedily infected by persons migrating from it to them.

(To be concluded.)

Medical Societies.

THE ANATOMICAL RELATION OF PULMONARY PHTHISIS TO TUBERCLE.

THE discussion at the Pathological Society of Dr. Wilson Fox's paper on this subject, adjourned from the 1st instant, was concluded on Tuesday evening last.

Dr. C. J. B. WILLIAMS.—I cannot but think that this debate on tubercle has been about words more than things. A great many things have been shown, and we have had abundant proofs of much diligent labour and careful observation; but the object of all this seems to be more to determine what these things shall be called than to find out what is their real nature. When Dr. Fox and others, after the example of Virchow, call tubercles "growths," they give no more satisfactory account of their nature and origin than the girl Topsy did when, in answer to a question about her nativity, she replied, "S'pose I grow'd." In fact Topsy was a growth in a truer sense than tubercles are; but as this did not account for her origin and nature, neither will the word "growth" explain the origin or nature of tubercles. And I maintain that the term is applicable to tubercles only to a very limited extent. It is one of their most remarkable characters that, except at their first development, tubercles do not grow as other growths and tumours do. They harden by the increasing number and consistence of their corpuscles; and this induration, by depriving them of pabulum from the blood, leads to their ulterior decay, either by caseation or by dwindling. As growths they are insignificant and abortive, and their chief characteristic is early decay. This is the foundation of their consumptive character, tending to the destruction of the tissues and the waste of the body. That miliary tubercles are essentially modifications of the lymphatic glandular tissue, I think fairly proved by recent observations in confirmation of the opinions of Portal, Broussais, Abercromby, and others. The similarity of scrofulous disease in lymphatic glands and tuberculous disease in the lungs, and their succession in the same individuals and families, have been generally accepted as strong evidence in favour of their identity, and rendered most probable the views of Portal and Broussais, founded on anatomical as well as on clinical observations, that miliary tubercles have their seat in the lymphatic textures. And

since in recent times the microscope has been brought to bear on the subject, and Virchow first declared miliary tubercles to resemble lymphatic or adenoid tissue in structure, there has been a general concurrence of opinion in the matter, and few now doubt their resemblance, if not their identity. The experiments of Dr. Sanderson and Dr. Wilson Fox on artificial tuberculisation led to the same conclusion; and now we have Dr. Fox in his address emphatically declaring that "tubercle is a lymphatic overgrowth." For my own part I had, forty-five years ago, expressed my conviction that miliary granulations in the lungs owed their constant form and size to their connexion with some elementary part of the lung-texture, and I was quite prepared to conclude, on the new evidence given, that the lymphatic tissue is that element; but that they are mere overgrowths of that tissue I could not and do not admit; nor do I believe that the lymphatic system is at all necessary to the production of other tuberculous formations, not granular. A mere overgrowth of a tissue ought to be an increase of all its parts—of the stroma, of the trabeculæ, and of the lymph-paths, as well as of the corpuscles; and this is what we have in true lymphoma, and in the adenoid enlargements of leucæmia. So says Dr. Bastian. So said I long ago. But this is not tubercle. In tubercle you have increase only of the *corpuscles*; and they are not merely multiplied; but they are altered; they are harder; so that as they crowd in their proliferation they form, not soft expanding swellings as in lymphoma, but little hard nodules; and their subsequent history of irritation and obstruction of surrounding parts, and of decay and caseation in themselves, is dependent on this essential character of induration, which is not comprehended in the term "overgrowth." I say, then, that tubercles, if a growth at all, are a bad growth, a cacoplasia as well as a hyperplasia, and the elements altered are the lymph-corpuscles rather than the whole adenoid substance. Do you ask for my proofs? I refer you to all the best microscopic descriptions, from those of Gulliver, which were the first, to those of the present day, not excepting Virchow, but excluding his fanciful conjectures about connective tissue. Still more strongly I appeal to the evidence afforded in the numerous microscopic specimens brought forward in this debate, some beautifully clear and conclusive, others more confused, and bearing some likeness to the thicket of "growths" in which the minds of their observers may have become bewildered. But more or less distinctly I see in all these microscopaice an assemblage of crowded corpuscles of small dimensions, with more refractive granules shining out within and among them. These corpuscles bear the closest resemblance to those of adenoid tissue, and to the pale blood-corpuscles, "leucocytes," as they have been named improperly, for they are not essentially cells at all; therefore I call them "sarcophytes," flesh-germs. Crowds of such corpuscles, but without their colloid and amœboid properties, form the bulk of recent miliary tubercle, with little or no reticulum or stroma. When they get older and do not caseate, fibres appear among them and around them; about these I shall have something to say presently. But it is the corpuscles, like those of the lymphatics, that mainly constitute miliary tubercles, wherefore Dr. Sanderson and Dr. Wilson Fox call tubercles adenoid growths. Dr. Cayley objects to this, because this same so-called adenoid tissue may be produced in any part of the body by almost any kind of irritation: in the margin of a hard chancre, in the liver in the early stage of cirrhosis, in the lung textures by the presence of irritating dust, as in grinder's phthisis. I think that Dr. Moxon had a preparation showing the same adenoid appearance in a blood-clot. I quite agree with these gentlemen, and I thank them for the illustrations which they give of my views. The appearances are the same and the corpuscles seem identical, but their origin is different. The corpuscles of miliary tubercle are lymphatic, being developed by infection in the adenoid texture. The corpuscles of inflammatory irritation are the sarcophytes from the bloodvessels, the pale blood-particles migrating and forming the corpuscular exudation-matter of scrofulous and other low types of inflammation. And as, according to von Recklinghausen, "the lymph-corpuscles are universally admitted to be identical in all their characters with the colourless corpuscles of the blood," so we find the same resemblance in appearance and the same unity in nature and history in the multiplied corpuscles of diseased lymph in miliary tubercle, and in those of inflammatory exudations in scrofulous subjects. And thus, in brief, you have my key to the twofold seat and origin of tubercle, or rather of consumptive disease:—1. Lymphatic, miliary, infective, scattered. 2. Inflammatory, diffused, local. Thus we get explained the identity and yet the difference of all the chief elements of consumptive disease—phthinoplasms, as I call them—granular and diffused, differing in their form and seat, but alike in their corpuscular composition and in their proneness to decay. Dr. W. Fox says that he doubts that caseous tubercle originates from the exudation of white corpuscles. If he means that they exude in the caseous state, I doubt as much as he. But neither I nor any reasonable man can now doubt that white corpuscles do exude from inflamed bloodvessels, and we have abundant proofs that they form a corpuscular lymph which may turn either to pus-cells in suppuration (which is a process of excretion), or to a fatty disintegration in caseation, which is the condition of yellow tubercle. Suppuration results from continued inflammation, which involves a chemical change, a further oxidation of some of the protein of the corpuscles into a liquid tritoxide; but caseation results from lowered vitality, and is a process of decay. And now to conclude with a few words on *fibroid phthisis*, which, in opposition to Dr. Moxon, I hold to be a reality in both tenses, present and past, and yet, differing from Dr. Bastian, to be still a variety of phthisis. In some of the microscopic views of tubercle which we have seen, in addition to the prevalent corpuscles, there have been an admixture and intertwining of fine fibres. And these are found not only in old miliary tubercles, but sometimes in recent granulations, and still more frequently and largely in the red and grey consolidations of chronic phthisis and pneumonia. It has been the fashion to talk of these fibres in high Dutch, and to call them connective-tissue growths. I prefer the plain English notion of them which would call them fibrous, and trace their origin to the primordial fibrils found in clots of blood or liquor sanguinis, and forming part of the inflammatory exudation of serous membranes and other textures. I suppose my friend Dr. Beale will condemn me in using the word *fibrillation*; nevertheless I must apply some such term to the reality which is exhibited in these microscopic sketches of my friend Mr. Gulliver. They show the primordial fibrils which are formed in the spontaneous coagulation of liquor sanguinis, independently of cells, nuclei, or any other tissue element. There are distinct, fine, even fibrils, of uniform size and considerable length, crossing and interlacing each other—in fact, just like those of connective tissue; and I do not see how we can avoid the conclusion that they may be the primary material of such tissues. In ordinary nutrition, and even in hypertrophy, the growth of tissues may be effected by the activity and proliferation of their proper cell-germs or bioplasm; but in inflammation and in similar states of vascular excitement there is an overflow of plasma, through the coats of the bloodvessels, with nascent materials, ready to form, without the aid of any cells or germinal matter of the old tissue. The result is the *coagulable lymph* of John Hunter, in all its varieties; the *fibrinous and croupous lymph* of Rokitansky; the *fibrinous and corpuscular lymph* of Paget; the *plastic and cacoplastic exudations* of your humble servant. These views account for the relations of tubercle or phthisis to inflammation more satisfactorily than the maze of growths in which the North Germans mystify the subject. The more fibrinous and less cacoplastic exudation becomes organised into a tough contracting tissue called fibroid and the like chronic consolidations. The more corpuscular and aplastic degenerates into cheesy matter, to soften and decay; this is diffused yellow tubercle and similar results of scrofulous pneumonia. These are the products of inflammation, confined to the inflamed part; but, by infecting the lymphatics, the matter may contaminate other parts in the form of scattered miliary tubercles. And all these phthinoplasms, whether they wither and dwindle like fibroid, or caseate and decay as tubercles and corpuscular indurations, represent different degrees of the same consuming disease, which brings the life-giving and flesh-forming materials of our body to premature decay.

DR. GREEN.—In listening to Dr. Wilson Fox's most able introduction of the present discussion on the relations of pulmonary phthisis to tubercle of the lungs, I think that there

were two main points upon which he especially insisted: firstly, that the anatomical changes in the lungs in acute miliary tuberculosis are precisely similar to those met with in pulmonary phthisis; and secondly, that the development of tubercle plays the most important part in the production of the latter disease. With regard to the first proposition—that the changes in the lungs in acute miliary tuberculosis are precisely similar anatomically to those met with in phthisis—I have but little to say. The recognition of this similarity is so important in studying the pathology of phthisis that I think, Sir, pathologists owe very much to Dr. Fox for the prominent way in which he has brought it before the notice of this Society. These changes, which have been so fully described by Dr. Fox, may be briefly stated to be of two kinds—the one an accumulation of large epithelial-like cells within the pulmonary alveoli; the other, the development of a small-celled adenoid growth in the alveolar walls, or in the interlobular tissue. The former of these growths Dr. Fox regards as an inflammatory product, whilst the latter he describes as *tubercle*. What, Sir, I am desirous of bringing before the notice of the Society to-night is the pathological relations which appear to me to subsist between these two kinds of growths. In order to state my views as briefly as possible, I would venture to express my belief—1st, that the accumulation of epithelial-like cells within the pulmonary alveoli, and the development of the small-celled adenoid growth in the alveolar walls and in the interlobular tissue, are both the anatomical results of the same pathological process—a process which comes within the category of what we understand by inflammation; and 2nd, that the predominance of the one or of the other of these anatomical changes depends mainly upon the intensity of this inflammation. That the growth in the alveolar walls and that within the alveolar cavities are both the results of one common cause appears to me to be evident from several considerations. In the first place, in a large proportion of cases of acute tuberculosis these two kinds of growth are so intimately associated—the nodules of induration consisting partly of the one and partly of the other—that it seems to me exceedingly unjustifiable to assume that they stand to one another in the relation of cause to effect. Then again the fact that in other cases the nodules consist entirely of the small-celled adenoid growths, and that this growth is sometimes so markedly fibroid that its development must evidently have extended over a somewhat lengthened period, clearly shows that this growth by no means necessarily causes any proliferation of the alveolar epithelium (endothelium). For these reasons therefore, Sir, I venture to submit that in these cases it is not a question whether the tubercle caused the pneumonia or the pneumonia the tubercle, but that both these products are the result of the same irritating agent. The point, however, to which I would especially venture to direct your attention is to what I believe to be the cause of the preponderance of the one or of the other of these anatomical changes in acute tuberculosis and in phthisis. Upon studying the alterations in the lungs in these diseases, and comparing them with those which result from inflammatory processes in other organs, I am led to believe that the greater the intensity of the inflammatory process, the more does it tend to produce proliferation of the large cells contained within the alveoli; the less its intensity the more does its influence tend to be limited to the elements in the alveolar walls and interlobular tissue. Further, that whilst the large epithelial-like cells invariably undergo retrogressive changes, the small-celled adenoid growth in the alveolar walls or in the interlobular tissue very frequently undergoes progressive development and becomes densely fibroid. In the most acute cases of tuberculosis and of phthisis, the principal anatomical change is an intra-alveolar one. In those cases of acute phthisis which have been termed pneumonic phthisis, the pulmonary consolidation consists almost entirely of the alveolar accumulation, and I must confess that in many of these cases I have failed to detect any marked change in the alveolar walls. The intensity of the inflammatory process not only determines to a great extent the anatomical characters of the pulmonary consolidation, but also the subsequent changes which take place in the small-celled growth in the alveolar walls. The large intra-alveolar elements, as already stated, always degenerate. If the intensity of the process be very considerable the small-celled growth also dies, but if less intense and more chronic it undergoes progressive development and becomes fibroid. I would here say one word respecting the death and caseation of the new tissue. This Dr. Fox regards as in great measure due to the obliteration of the capillaries by the tubercular growth. The death of the large epithelial-like cells which have accumulated within the alveolar cavities, as I have already stated, appears to be in great measure owing to their apparent inability to undergo further development, and it can be explained, I think, quite independently of any such interference with their nutritive supply. The non-absorption of the retrograde products, on the other hand, and the resulting caseous metamorphosis, is I think mainly due, as stated by the late Professor Niemeyer, to the interference with the circulation in the alveolar walls which is caused by the pressure exercised upon the capillaries by the intra-alveolar accumulations. It is in the most acute cases of phthisis, those which have been termed "pneumonic phthisis," that this death and disintegration of the consolidated lung occurs so rapidly, and it is just in these cases, I venture to think, that any adenoid growth in the alveolar walls, which might be supposed to interfere with the circulation, is almost entirely wanting. From the few observations I have ventured to make I wish to be understood to express the belief that the various anatomical changes met with in the lungs in phthisis are the result of inflammation, and that the difference in their anatomical characters and in the subsequent history of the newly-formed elements is mainly due to differences in the intensity and duration of the inflammatory process. With regard to the question as to what part *tubercle* plays in the production of phthisis, it appears to me, Sir, that the ground for attempting to make any pathological or etiological distinction between the small-celled adenoid growth which is developed in the alveolar walls and which is called by Dr. Fox tubercular, and the intra-alveolar growth which is termed by him pneumonic, are somewhat insufficient. Anatomically, as Dr. Fox has stated, it is often impossible to distinguish the typical miliary tubercle from certain other chronic inflammatory growths. For my own part, I must confess that I am unable to distinguish the small-celled reticulated structure of the grey miliary tubercles from that often met with in some portions of the indurated tissue of a cirrhosed liver. I cannot help thinking that the prominent part which the production of this adenoid tissue plays in these chronic inflammatory processes in the lungs is to be explained by the anatomical peculiarities of the pulmonary texture. This adenoid tissue is not only largely met with, as shown by Dr. Sanderson, in the neighbourhood of the minute bronchioles, but the recent investigations of Buhl and others seem to show that the alveolar walls are intimately connected with the lymphatic capillaries, and that the large cells lining them correspond with the lymphatic endothelium. In conclusion, I would say one word upon the question—What constitutes tubercle? In the first place, I think it is impossible to frame a definition of "tubercle" upon a purely anatomical basis. The small-celled reticulated structure which makes up the greater part of the miliary nodules in the lungs and in other organs, is met with in parts of the indurated tissue produced by many chronic inflammatory processes. If there be any anatomical peculiarity which might serve to separate tubercle from other chronic inflammatory growths in tissues closely related to the lymphatic system, I cannot help thinking that it must be looked for in the giant-cells which have recently been so prominently brought under notice by Dr. Schüppel. Respecting the significance of these cells, I will hardly venture now to express an opinion. I will only state that I have found them in the indurated tissue of a phthisical lung in which there was no naked-eye appearance of tubercle; and I am rather inclined to regard them simply as the results of chronic inflammatory processes in tissues intimately associated with the lymphatic system. On these grounds I cannot help thinking that the use of the term "tubercle" tends to cause confusion amongst pathologists; and I would again venture to express the opinion which I did in another place more than a year ago, that it would, on the whole, be advantageous to discontinue it.

Dr. CRISP said, in the remarks he was about to make he should endeavour to touch upon a novel line of investigation, not pursued by any of the previous speakers. He believed if we were permitted to look forward to the proceedings of this Society fifty years hence the question of the anatomical relations of tubercle and other diseases would not be confined to the study of the disease in man, but the question would be, In what kind of organisation was the lesion first met with, and how did it differ from that in the human subject? If this ascending line of investigation had been pursued, he believed that many of the discrepancies and differences now existing would have been removed. He would give a striking example of ignorance on this head. M. Villemin, in 1865, made this

extraordinary assertion: "It is necessary to state that tubercle in the lower animals is excessively rare, and excepting man, who has unfortunately a special aptitude for phthisis, there are only the ape, the cow, and perhaps the rabbit and some other analogous rodents, that are really susceptible of becoming tuberculous." Others who have pursued the investigation have been equally ignorant of their general occurrence among foreign animals in confinement. He had met with tubercle in more than 100 different species of animals, quadrupeds, birds, and reptiles, and he believed that there was scarcely a vertebrate animal that might not under certain conditions become tubercular. Tubercle was common among our London cows when sanitary conditions were less considered. He had examined nearly all our British wild animals, many of the species several times, and likewise many foreign animals in spirits, but had never met with tubercle in an animal in a state of nature. In 1854 there was a great mortality among the sparrows at the Regent's-park Gardens. He examined many of these and found the livers, spleens, and intestines tuberculous; these birds may be considered half-domesticated, and they moreover fed with a large number of tuberculous animals. In support of the conclusions he had come to, he showed numerous drawings and preparations, many of them made twenty years ago, for the purpose of throwing light upon this important question. He would now try the ascending mode of investigation he had spoken of. In the vegetable kingdom there was nothing strictly analogous to tubercle: we have abnormal cell-growth, and abnormal cell-contents, and subsequent death, but nothing exactly resembling tubercle. The nearest lesions to miliary tubercle were the nodes and excrescences produced in leaves and stalks by the *cynipida* and other insects. In the animal kingdom, the effect of some irritants, such as mercury, stone-dust, and other extraneous bodies, was somewhat similar. But the specimens of grey, semi-transparent tubercle in the lungs of sheep, from a gordian worm, bear a greater resemblance. Here we have no transmutation into amorphous and caseous matter. Among invertebrate animals he knew of no lesion that resembled tubercle. Among fishes (especially pond fishes), he had sometimes met with hard fibrous tumours, with yellow caseous softening in the centre. Reptiles in confinement, especially the ophidians, are very subject to tubercle in the liver, intestines, spleen, and lungs; large masses of tubercle-like growth often block-up the alimentary canal. The liver is studded with small tubercular growths, and the lungs less frequently; nodules are present on the intestines; the spleen is frequently enlarged and tuberculated. Among the saurians he had frequently found tubercle, but up to the present time he had not seen tubercle in a batrachian reptile. Birds in confinement are all liable to tubercle, and the liver, spleen, and external coat of the intestines are much more frequently the seat of the lesions than the lungs; indeed, tubercle in the last-named organs is comparatively rare. He had observed four stages in fowls—first, the hyperæmic, congestive, or inflammatory, when the spleen and liver are greatly enlarged; second, the deposit of cell-growth in the connective tissue, especially round the smaller branches of the portal vein and Malpighian corpuscles of the spleen. In the former organs, the liver, the tubercular nodules, when the organ has been immersed in water for a few days, can be seen attached to the primary branches of the portal vein. The third stage is that of softening or cell-destruction. The fourth the cretaceous stage; the tubercles become hard, and contain more than one-half of cretaceous matter. In other examples in birds the tubercular deposit is of a softer character, and assumes more the form of the lesion seen in some quadrupeds. In mammals, especially in the quadrumana, there is a nearer approach to the disease as seen in man, although here even there is an important line of demarcation, for the liver and spleen are more frequently affected than the lungs. There is one practical and important point that he had long since pointed out—viz., that the vegetable feeders, as in birds, are more liable to tubercle; that the deposit arises from faulty nutrition and impure air; that it is hereditary, and in the lower animals, he believed, contagious. Other distinctions he had also enumerated—the comparative absence of cavities in the lungs, the non-occurrence of hæmoptysis. Other differences are, the absence of tubercular meningitis—the comparative absence of cough and of wasting of the tissues—the absence of perspiration—the longer duration of the disease—the frequent tuberculisation of the liver and spleen, so rare in man—the larger amount of fibrous and cretaceous deposit, &c. Histologically the differences were not important. There is one important matter that bears especially upon the question as to the identity of miliary and caseous tubercle discussed by Dr. Fox. In the lower animals these two stages of tubercle are frequently found together; thus the miliary or semi-transparent grey granular tubercle is often present in the membrane and in the intestines, whilst the caseous or softened tubercle exists more frequently in the liver, lungs, and spleen. It seemed to him a matter of little importance whether miliary or grey tubercle was only a stage of the caseous, or whether it was a distinct affection. One conclusion he thought was tolerably clear—that in all, or in nearly all cases of miliary tubercle in man, the disease was disseminated by inoculation—by the transmission of tubercular matter from some focus, or nidus, that has existed previous to miliary deposit; but as far as he knew, no such contamination could be traced in yellow tubercle, and this led him to the important question of inoculation. Unfortunately, those who have practised it appear (as in the case of M. Villemin) to have neglected to inquire into the anatomical, physiological, and pathological peculiarities of the animals experimented on. Thus neither the rabbit nor the guinea-pig, although often kept under conditions that would favour the development of tubercle, were either of them liable to it. He had examined a large number of guinea-pigs, but had never found one tuberculated. This was also the experience of Mr. Bartlett, of the Zoological Gardens. This led him to the question mooted by Dr. Bastian, Is the disease produced by the inoculation of human tubercle and by other extraneous bodies, true tubercle? He confessed that, looking to what may be called spontaneous tubercle in the lower animals, looking also to the morbid appearances and to the fatal termination of the disease, the results partake more of the nature of *pyæmia*. "Let me give two recent examples which I recorded in the recent volumes of our Transactions. A child under my care had a sore head; pus was absorbed, and a fatal termination was the result. In about twenty-one days I inoculated a guinea-pig with healthy pus from my own finger, and the animal died in thirty days with tubercular deposit in the liver, spleen, and mesenteric glands. If these cases are carefully studied, the difference is not so great as at first sight appears, and when the various anatomical and physiological differences that I have enumerated are considered, the conclusion that *true* tubercle is the result of these inoculations becomes a very questionable one. Many of the animals inoculated die within the period of thirty or forty days from the time of inoculation, whereas, in spontaneous tubercle, the duration of the disease may be prolonged to a considerable period, sometimes I believe to many years." He had endeavoured in the short space allotted for discussion to point out a few facts connected with this disease in the lower animals that had, he thought, an important bearing upon the question at issue, and especially upon the effects of tubercular inoculation. "These are not German importations, but they are the result of many years of hard work and patient labour, and I prognosticate that the line of investigation that I have chalked out in the study of this, and of other diseases, is one that will be hereafter universally adopted."

DR. JAMES E. POLLOCK considered that at this stage of the debate it might be well to review the doctrine which had been displaced, and that which it was proposed to establish in its place with reference to the applicability of the theories to actual clinical facts. Laennec, whose pathological teaching reigned supreme for forty years, had at least the great merit in his theory that he propounded a specific entity, and described a uniformity of progressive morbid actions; and it was found in practice that, while his theory was easily remembered and understood, it really did conform itself, as far as it went, to the observed features of phthisis in the living subject. This fatal disease, he said, has for its element an infiltrated morbid product, which, once deposited in the lung tissues, is never absorbed, but undergoes degenerative changes, involving the surrounding tissues in ulcerative destruction. Successive crops of these small bodies appear, till the lung becomes impacted, local inflammatory congestions take place, and the patient is wasted by the febrile disturbance caused by the softening of the infiltrated masses. A later pathology, under the guidance of Virchow, has taught us that the infiltrated product is not always found where there is phthisis or ulcerative wasting, and that the mass of what we do find in the lungs of persons who have died in advanced consumption is composed of cheesy and fatty degenerations common to products of inflammatory origin, or more special diseases, as syphilis. Both the French and the German master have recognised a miliary grey

deposit which might never soften, but impact the lung, as well as other organs, and is accompanied by acute febrile symptoms. Now, when Laennec called his supposed infiltrated product tubercle, he did so from its well-recognised physical properties; and before the days of microscopes these were aptly enough represented by the name. Histological investigation has recognised epithelial products, fibroid overgrowth, and lymphoid overgrowth, in every case of advanced phthisis. Virchow especially guarded us against studying tubercle by its properties after it became cheesy; for it then possessed characters common to pus, to cancer, and to sarcoma. In other words, varied inflammatory products were by Laennec mistaken for softened and aggregated tubercles: by a not unnatural transition the German school came to the conclusion that in the vast majority of cases of advanced phthisis the only appearances found were the products of inflammation and degenerative changes. Tubercle became limited to the miliary grey translucent deposit, and it was asserted that it only appeared as an incident in the course of advanced phthisis. In this transition of opinion we gradually lost the identity of the disease; its specific character vanished. Neither in the dissecting-room nor under the microscope could the so-called deposit be verified; all unity went with it, and we were left to the vague conclusion that not one but a multitude of affections might lead to ulcerative destruction of the lung. With the loss of identity and specific character all speculations as to the influence of heredity and other causative agents of course became vain; for why seek for special causes for a multiform affection? Dr. W. Fox, in his opening remarks, described his mental distress at finding himself thus perplexed, and by his propositions it appeared to Dr. Pollock that he had restored to us the unity which we had lost. The disease which all agree to call phthisis presented a remarkable conformity to one type, although it had many varieties. He was therefore inclined to accept it as offering a plausible and present solution for phenomena which could not be accounted for by the theories of Niemeyer. The question of the nature of tubercle was no doubt still in a transition state; but it appeared to him that Dr. Fox gave a description which included every variety of phthisis as seen in practice, excluding ulcerative bronchiectasis, catarrhal pneumonia, and indurative pneumonia; all the elements found in the lungs of phthisical patients were included in the list of morbid appearances observed in the acute tuberculosis of children. Tubercle may have no individual features by which it might be infallibly recognised, but its vital and pathological tendencies were unmistakable. The constant presence of lymphoid or adenoid tissue in the so-called tubercle might hereafter be disproved, but at present it was our nearest approach to truth, and Virchow and Latham still earlier pointed out the almost complete correspondence between the corpuscles of tubercle and the lymphatic glands. It was proposed to renounce the word tubercle, but if the disease in which it played so prominent a part remained a unity, it was better to retain the term, which in itself contained nothing contradictory of the latest composition assigned to it. There was no doubt we might have ulcerations of the lung without grey granulations, but it was very rare to find advanced cases without them. The new word "granulia" had not so much to recommend it as tubercle. Regarding the question from a clinical point of view, Dr. Pollock entirely believed in a miliary acute tuberculosis which need not of necessity proceed to ulcerative changes in the lung. But from a like clinical standing he must deny the accuracy of Niemeyer's pathology. It may not be that Laennec was entirely right, but the experience of large numbers of cases of phthisis contradicted the statement that the disease arose from a catarrh, although an epithelial impaction might be found to block the alveoli after death. Neither had he ever seen a case in which hæmoptysis originated phthisis. The truth is, this branch of the German school constructed a picture of phthisis out of theoretical materials. The disease was to conform to the theory, and because blood-clots were subject to cheesy degeneration, and cheesy degeneration was asserted to be the causative agent in producing grey granulations, therefore the hæmoptysis was asserted to be the cause of the phthisis. But who has ever answered the question, What caused the hæmoptysis? Again, out of the débris of Laennec's pathology arose the theory of fibroid phthisis. Every case of phthisis which went beyond a very early stage contained the fibroid element, and, as had been well remarked by Dr. Moxon, fibroid phthisis was only old phthisis in which the contractile element was developed. Regarding the inoculation of tubercle and its propagation by infection of the system, the experiments of Dr. B. Sanderson and others were of the highest interest, but he doubted if a similar state to that which had been produced in the rodentia could occur in man. Finally, all the facts drawn from observation of phthisis, the powerful influence of heredity, the marked obedience to one type of all the cases, with diverging features in the individual instances, pointed to a unity in the morbid appearances as a causative agency, while the variety in the features of the disease could be accounted for by the preponderance of one or other of the morbid anatomical elements observed in advanced cases. For instance, an acute typical miliary tuberculosis with high febrile symptoms destroyed the patient often before the degenerative changes had time to occur, and therefore the latter were not observed post mortem. The chronic ulcerative destruction of lung where the vessels were blocked and strangled by the aggregation of the granulations afforded after death an abundance of cheesy degeneration and epithelial impactions. The attacks of pneumonic congestion to which the phthisical are so liable may be coincident, not only with increased inflammatory products, but with fresh crops of grey tubercles, possibly derived from secondary infection. The strumous variety of phthisis will be found to exhibit more of the true lymphoid growth, while fibrous overgrowths abound in very chronic cases with retracted chest walls and great shrinking of the pulmonary tissues. Out of the number of morbid products which Dr. Fox observed in chronic phthisis, there might thus be a basis for the several varieties of the disease as seen during life. Dr. Pollock desired to admit that, while there was a typical pathological entity which might be called tubercle more properly than anything else, the disease called phthisis was the manifestation of various morbid agencies, lymphoid, inflammatory, and degenerative, which in their various evolutions constituted the several varieties of the clinical affection.

Dr. BURNEY YEO said that Dr. Fox and the speakers who had followed him had based their remarks upon carefully observed post-mortem appearances. All were agreed as to the accuracy of these facts, but the difference lay in the interpretation to be given of them. He thought that the anatomical evidence would be better understood if all the circumstances in the history of the case were considered. It had been argued that what was called tubercle was not specific because it had no specific structure, that it was adenoid or resembled lymphatic gland tissue. But, as Dr. Beale has said, "histological similarity was no ground for specific identity." No one argued that the embryonic cells of a whale were really identical with the embryonic cells of an oyster, though histologically they might not be distinguishable. It was therefore from the life history of a morbid, as of a normal product, that we must judge of its specific character. It had been maintained that all the morbid deposits in the lung which had been regarded as tubercular were "products of inflammatory origin." This might have the merit of simplicity, but he thought it indefinite and unsatisfactory. These masses of deposit and infiltration might as easily and as reasonably be regarded as of tubercular origin. It seemed to him impossible, looking at anatomical details in the light of clinical experience, to admit the applicability of the theory of chronic inflammation to all cases of phthisis. It was equally impossible to regard them as exclusively of tubercular origin. Pulmonary phthisis might be separated into two main forms—the tubercular and the inflammatory. Both were complicated by secondary changes, which tended to confuse their anatomical characters. In the first, which he assumed to be hereditary, three chief circumstances determined its clinical course and anatomical results. 1. The degree of intensity of the original taint. 2. The influence of secondary complications. 3. The effect of time favouring changes in the morbid products. When the original taint was intense we had acute tuberculosis, and the grey granulation generally developed; if the taint was less we had acute phthisis, and in proportion to its duration we found it complicated by the products of chronic inflammation, the pro-

duct of lymphatic irritation, &c. In this way acute phthisis was directly related to acute tuberculosis. Such cases for the most part commenced with indications of a general constitutional affection, and often only after some weeks signs of local mischief were observed. Was this the least like the course of an extending catarrhal inflammation? In chronic phthisis they met with cases of the second class; he believed the most of these were of inflammatory origin. They began with definite signs of local inflammation, and often with no symptoms of constitutional affection. In chronic phthisis you met with the grey granulation radiating, as it were, from an infecting focus of caseous deposit; this, he thought, required further investigation. He agreed with Dr. Cayley that it was premature to give a definition of "tubercle." The statement that it was a "lymphoid overgrowth" was arbitrary and disputable, and not substantiated by anatomical observation. Looking carefully at the facts that had on all sides been adduced, it appeared more consistent to regard "tubercle" as the cause rather than the consequence of lymphatic irritation; and from this point of view he was anxious to hear what Dr. Wilson Fox had to say in answer to Dr. Cayley's remarks about these multinucleated giant cells, which some observers considered the most essential element of tubercle. He thought it would be rash in the extreme to sanction, as had been suggested by Dr. Bastian, the substitution of any such term as "granulia" for "tubercle." It would do nothing to remove the state of suspense which, if they desired to be honest and logical, they were compelled to adopt in regard to the precise relation of that deposit which is generally called tubercle to the larger infiltrations, concerning which there is dispute.

Dr. WILSON FOX.—In replying to the many able arguments which have been addressed to the elucidation of this discussion, I must apologise for the fact that to answer extempore those which we have heard this evening is by no means a simple or an easy task. To some which have been before us a fortnight I have been able to devote some consideration, but those heard for the first time demand, from the authority of the speakers, a careful reflection, in order to appreciate fully their bearings on this intricate subject. If, therefore, I fail to pay the attention which they deserve to some of these points, I trust that these gentlemen will not regard it as evidence of any want of respect on my part to the views which they have expressed. I cannot but feel grateful to one and all for the generous indulgence which the Society showed me on the introduction of this subject, and also for the great courtesy and kindness with which my remarks have been treated by successive speakers. I am glad also to observe that, with regard to the main anatomical facts at least, there is a considerable unanimity of opinion in this Society. That there should be considerable differences respecting their interpretation is no cause for surprise. When I introduced the subject I felt that some points which I was obliged to deal with somewhat summarily would be regarded as requiring further elucidation, and in this I have not been disappointed. I was, however, obliged to state conclusions, rather than to support them by argument, and for this reason I trust that the Society will permit me to explain in some measure the grounds on which some of these conclusions are based, and to enlarge on a few points on which some members of the Society have asked me for further explanation. As I stated when I introduced this subject to the Society, my object was to investigate whether there were such essential anatomical differences in phthisis as to justify the classification of its different forms as distinct diseases. In the investigation of the lungs of phthisical patients, in addition to pneumonic and fibroid changes, I found one common feature in the whole class—viz., a growth of small cells or nuclei, in some cases imbedded in a fine reticulum, while in others this reticulum was less apparent; but in all the cells or nuclei were densely massed, and were of the same character. In some parts this growth formed round masses, corresponding to the grey granulation in serous membranes, in others it was diffused through large tracts of the tissue of the alveolar wall and bronchioles. In the latter case it was usually mingled with pneumonic products, and in a very large proportion of what appeared to the naked eye as granulations it was also mixed with pneumonic products—that is, with epithelial proliferation in the interior of the alveoli. I regarded this growth as the distinctive feature of phthisis, whether acute or chronic, and it appeared to me that when diffused it was of the same nature as the circumscribed masses, the grey granulations. I was, however, long under the conviction that the grey granulation was the typical form of tubercle, and therefore I felt doubt as to what the character of this diffused growth really was. I therefore determined to investigate the pulmonary manifestations of a recognised tubercular disease—acute generalised tuberculisation in children, and I found here, as I have stated, the same sets of changes—viz., circumscribed and diffused growths of the same nature. I argued, therefore, that in the generalised disease a growth similar in structure, similar in vital characteristics, and similar in its changes, occurring in the same disease in the same patient, but differing only in being in parts circumscribed and in parts diffused, must be in all probability of the same nature, and that if the circumscribed growth—the grey granulation—was tubercular the diffused growth must also be so, and that if this was tubercular in acute tuberculosis it must also be so in other forms of phthisis. In bringing the subject before the Society I thought the most definite course would be to invert my own procedure, and to inquire first what was tubercle in the lung; and this was the reason why I devoted so large a part of my description to the changes occurring in acute tuberculosis. To Dr. Payne's and Dr. Cayley's inquiry what part of the various morbid changes in this disease I consider characteristic of tubercle, I would reply that in the abstract which I furnished, and also in my description, I categorised all the essential changes of whatever kind, but that I withdrew all simple inflammatory changes from this category as well as the accidental ones of emphysema, collapse, dilatation of the bronchi, congestion, œdema, and ecchymoses. I endeavoured, however, to show that all the granulations, except some of the earliest spots of lobular pneumonia, had one character in common—viz., this growth in greater or less abundance. Some of the granulations are pneumonic, with, however, this growth superadded in their wall. The epithelial proliferation is not, in my opinion, characteristic; it does not differ from that found in ordinary catarrhal or lobular pneumonia; but the growth, whether diffused or circumscribed, is characteristic, and, from its similarity to or even identity with the grey granulation, I still call it tubercular. The products of ordinary inflammation are, in the lungs as well as in the serous and mucous membranes, almost always found co-existing with tubercle; but as in the serous membranes the distinction can be maintained, and as the growths can exist without them, I think that they must be regarded as non-essential in an anatomical sense, though I believe with Dr. Green that in some cases they originate under the same cause, or they may precede and even excite the tubercular growth or follow it. The tubercular growth is something superadded to this, and gives to the pneumonia characteristic features. It causes the prominence even of the softer granulations, and it leads to caseation—necrosis—by destruction of vessels, which does not occur in ordinary pneumonia. I think it desirable that the inflammatory process and the new growth should, from an anatomical point of view, be considered separately, though their relations to one another are so intimate. Anatomically, pneumonia is not tubercular unless this growth co-exists in the alveolar wall. When this is present I think the pneumonia may be conveniently called a "tubercular pneumonia"—that is, a pneumonia associated with tubercle; and this association is often more common in the lung, in acute tuberculosis, than the typical grey granulation—that is to say, a large proportion of the granulations in this disease show some pneumonic changes combined with the growth. I hope, therefore, that it is clear to the Society that I do not consider all the changes in the lungs in acute tuberculosis as tubercular. I limit the term tubercle to this growth. The criticisms that have been directed to the conclusions which I have thus formed may, I think, be summed up under the following heads:—Firstly, that as the growths described, whether existing as granulations or in a more diffused form, are wanting in absolutely specific histological characters, it is impossible to separate them from other diseases. This point has been distinctly affirmed by some speakers, and appears to me to underlie the argument of others. Some, however, think that the form is distinctive, and would therefore still limit the term to the grey granulation. Secondly, that the dis-

ease known as acute tuberculosis, though presenting the same granulations and growths as ordinary phthisis, is yet so widely separated from it as to form no criterion for an anatomical analogy between the lesions of the two diseases. Thirdly, that the one lesion known as the grey granulation is not necessarily the mark of one disease, but may include several which are distinct from one another. Fourthly, that the grey granulation presents certain cell forms which are sufficient to characterise it and to distinguish it from the diffused growth and other granulations presenting, in other respects, similar characters. I shall endeavour, as far as lies in my power, to deal with these objections *seriatim*; and if I am obliged to enter, in relation to some, into a more abstruse argument than I had originally intended to bring forward, I think that it will be acknowledged that these points must be fairly met in the discussion of this question. I can only endeavour, in spite of the difficulties of some of these subjects, to do so as briefly as possible. I will allude first to the last which I have named—viz., a criticism introduced by Dr. Cayley. If I understand him rightly, I gathered that he regarded the "giant cells," the "Riesenzellen" of Virchow, as characteristic of the grey granulation of true tubercle; at least he stated that I had not found them so frequently as others, because much that I considered tubercle was not really so. My remark was, however, confined to the grey granulations proper in the lung, or at least to such as appear so microscopically. If, however, we examine a number of grey granulations in respect of these cells, we shall find them, at any rate in such sections as we make, in a very small proportion; but the grey granulation, under the microscope, is easily recognised without them, and has been so recognised, before their frequency was observed, by the dense rounded mass of small cells and nuclei, with and without a reticulum. If we exclude all otherwise typical granulations in which we cannot find these cells (I do not say in which they do not exist) from the category of tubercle, we shall, I think, find a very considerable further reduction of the bodies that bear this name. Failing this characteristic, I would assert that, with the further exception of its rounded form, the grey granulation has no feature to distinguish it from the more diffused growth, which, as I have just stated, presents in all other respects essentially the same histological structure and vital characters. I must demur to the opinion that the rounded form is sufficient to separate the grey granulation from the diffused growth around. In the first place, it merges insensibly into it; and though Rindfleisch, to whom Dr. Cayley has alluded, makes the distinction in the intestine when he speaks of a diffused growth around ulcers as being inflammatory, while grey granulations also exist there, he admits that in the lungs processes, or irregular growths—such as have been very well figured by MM. Hérard and Cornil,—extend between the granulations. I admit that many grey granulations are tolerably sharply circumscribed, but in many, equally typical in other respects, the same growth extends indefinitely into the alveolar wall; and I believe we cannot then say that the latter is different in essential nature from the former when thus extending from it. Again, when tubercle—what is universally admitted to be tubercle—grows in this sheath of an artery or bronchus, the extension is longitudinal; and though it tends here also to form nodular masses, there is as much a diffusion or infiltration within the sheath as there is in the alveolar tissue of the lung, and the round form is often only an accident due to the section being made transversely. Mere roundness of form and mere circumscription cannot, therefore, be affirmed as being essentially distinctive of even typical tubercle. I believe that, whatever be the real nature of the granulation, whatever characters it possesses are possessed equally by the diffused growth—the same histological structure occurring with it, and having the same vital tendencies. In the specimens which I brought forward of tubercular growth in an arterial sheath extending into the adjacent alveolar texture, you cannot, I think, logically say that the tubercular growth is limited to the former. The growth is the same; and, whatever it is in the arterial sheath, it is, I believe, the same in the alveolar wall. You cannot, when they thus occur together in the lung, call one inflammatory and the other non-inflammatory; you cannot, except by a mere arbitrary definition, call one part tubercular and the other part scrofulous pneumonia, or arbitrarily draw a line of demarcation between the different aspects of a similar growth in the margin of an intestinal ulcer. I do not think that we ought scientifically to separate the granulations which contain some epithelial inflammatory products, but in which this growth occurs, from those which contain none—to call the latter pseudo-tubercle or chronic lobular pneumonia, and limit the idea of tubercle to the former when they both occur together. I lay in this case especial stress on their concurrence, for reasons into which I shall enter presently. The recognition of tubercle without the grey granulation may be and is sometimes a matter of doubt and difficulty, but in the case of acute tuberculosis I believe that we must regard these diffused growths as being of the same nature as the circumscribed form, and on this point I would quote an aphorism of Virchow:—"The form ought only to be admitted as a decisive criterion of new formations when it is conjoined with a real difference in the tissue, and does not result from accidental peculiarities of situation or position." Is there any real difference in the nature of the grey granulations and the diffused growths? In my opinion this is not discoverable by histological characters, nor by the transformations to which they lead, nor by the circumstances under which they originate. This is admitted by nearly every member of the Society who has discussed this point, including Dr. Bastian, to whose singularly able address, with its further details published *in extenso*, I shall have to make more than one allusion. I would, however, remark that I somewhat differ from him in the interpretation which he puts upon the writings of some pathologists when he says that these diffused growths "amidst the shipwreck of the old term (tubercle) were deliberately cast aside" out of this category. He considers that I have lost sight of the fact that the definition of tubercle, as consisting only of the grey granulation, was "confessedly arbitrary," for a certain purpose. Now, "arbitrary" was the very word that I used in introducing the subject; but even in the imperfect revision which I was able to give to the report of my *extempore* remarks, I did not choose advisedly to retain such an expression as applied to any definition of Professor Virchow, as being capable of being understood to imply less of the personal respect and gratitude which I entertain towards him; and, without dwelling on the subject as I would gladly do, I cannot quit it without expressing how great is my sense of the obligation due to him for the stimulus which he has given to pathological inquiry, not only on this but on nearly every important branch of medicine, and how vastly he has increased our actual knowledge. On this subject of tubercle in particular I feel that I should have wanted a guiding clue to most, and these some of the obscurest points in this difficult subject, without his luminous exposition of its morbid anatomy and without the references collected by his profound learning in his history of the "Morbid Growths." But when Dr. Bastian asserts that these diffused growths have been categorised by other authors under the term chronic and interstitial pneumonia, I would, from my own reading, which has been directed somewhat carefully to this point, state my impression that though the presence of chronic pneumonia and induration has been affirmed, especially by M. Lebert, both for these and also for a large proportion of the granulations present (pneumonie disseminée chronique)—though I confess that I am unable fully to understand the distinction which he makes between these and the grey granulations,—neither in this sense nor in that of an "interstitial pneumonia" (a term which, as applied to them, I consider as essentially incorrect and misleading) has their identity of structure with that of the grey granulation, from which they may be seen extending, been distinctly affirmed until recently by Prof. Buhl, and previously by Dr. Sanderson, whose views on this point, as far as I can judge (though in his absence I scarcely venture to quote him), correspond in many important points with those I have laid before the Society. I do not recollect to have found it stated, except by these authors, that these growths are of the same structure and pass through the same changes as the grey granulation, nor do I find anywhere the proposition, as stated by Dr. Bastian, that they must, in spite of this recognition, be avowedly rejected from this category when they occur with it, because we want an artificial definition of tubercle; and form (not only form, but a certain form) and appearance combined are the only very positive criteria at our disposal, and that we must, therefore, for convenience sake,

in our phraseology, draw the line here, and arbitrarily choose to describe these changes, which are apparently similar in nature, in different terms—implying a real dissimilarity,—to call the grey granulation tubercle and all the other growths chronic inflammation. Such a mode of definition thus stated would have been intelligible, but I do not think that it would have stood or that it will stand the test of criticism or of practical experience. What I think was first attempted was to distinguish the grey granulation from caseous change; then grew up the idea that the grey granulation was the only tubercle, and the similarity of these growths was overlooked, and the process by which the caseous change is most commonly produced in phthisis was, I believe, mistaken. Every form of tubercle has been called chronic pneumonia by some authority or another, but to this point I shall presently allude. Nor do I think that Dr. Sanderson or myself can be said to regard some of the "old infiltrations" as being tubercular. These were largely pneumonic, consisting of products occupying the interior of the alveoli. In this sense of the word I agree with Professor Virchow that tubercle is not an infiltrated product; and, owing to the misunderstanding that may arise from this term—which is not very etymologically accurate, though it is, with respect to these growths, as applicable to tubercle (if they be tubercular) as it is to cancer,—I think that they had better (though I have used the former term) be described as "diffused," in contradistinction to the "circumscribed" form. I would now refer to some criticisms which have been directed to the anatomical peculiarities and nature of this growth, and especially to the term "adenoid" or "lymphoid," as applied to them. I used generally the latter phrase, or styled them lymphatic; the word "adenoid" I employed as a quotation from my friend Dr. Sanderson. I greatly regret his absence, because he would have been able to give a much more complete exposition of this point than I am able to do. I had thought that the word "lymphoid," as introduced by Virchow, had become so familiar a phrase, as expressing one of the peculiarities of tubercle, that it required no further explanation. Virchow long ago drew a parallel between the structure of the grey granulation and an isolated lymph follicle, and stated, and I believe accurately, that in some places, as in the spleen, it was almost impossible to distinguish the one from the other. The term is one of resemblance, and does not affirm identity of structure. Since the publication of Virchow's Cellular Pathology our knowledge of the structure of lymphatic glands has been greatly extended by the researches of His and Frey. We know from their researches that all these bodies possess a very complex structure, involving the distribution and reunion of afferent and efferent ducts, and that the glands consist of two parts, a medullary and a follicular portion. The composite structure is only found in the larger glands, and not in the isolated follicles of the intestines, which His believes to be only aggregations of the diffused adenoid growth in these parts. The main tissue is, however, composed of a reticulum in which cells lie imbedded, though these are more densely packed and the reticulum is less distinct in the follicular portions. It is to the follicular parts of the gland, or to solitary follicles, that typical grey granulations bear the greatest resemblance; but the resemblance is one of tissue, and not of anatomical structure, and it is, after all, only a resemblance, and not an identity. The tissue thus formed has been called by Kölliker and His "cytogenic," and has many anatomical variations and distributions, into which I cannot enter. It is, however, as far as our present anatomical knowledge goes, a derivative of the connective tissue. In this sense I think the likeness of tubercle to these structures may be maintained, as far as concerns the reticular structures in which such cells are imbedded, though in tubercle, as in the lymphatic glands, larger polynucleated cells are not wanting. This tissue is not, however, as a question of normal anatomy, necessarily circumscribed, but it occurs in diffused areas, particularly in the submucous coat of the intestine, and the circumscribed lymphatic masses are only to be regarded as modifications of this structure, with which, except in details of anatomical arrangement, they closely correspond. I am quoting entirely from the researches of His, Frey, and von Recklinghausen, though as far as my observations have gone I can largely confirm their statement in the latter point; but the fact that these two forms exist naturally, and that in embryological development the one proceeds from the other, affords, I think, an important analogy and clue to the nature of some new formations. To return to the description of tubercle as a lymphoid structure, it may be remarked that, as Dr. Sanderson and myself and others have shown, it frequently arises from smaller conglomerates of the natural adenoid or lymphoid tissue. It also arises in the sheath of the arteries and bronchi, which are believed with great probability to be of the nature of lymph spaces. Many typical tubercles have, therefore, not only a lymphoid or adenoid structure, but have also a lymphoid origin; and I think, therefore, that this term may be appropriately applied to them. As regards the diffused growths, I have stated my belief, which has been confirmed by other speakers in this discussion, that they have the same structure as the grey granulation. That they have the same anatomical origin in the cases where that of the latter can be shown, is not so easy of proof. I hypothetically stated the possibility of their origin and extension from the lymphatic plexus of the lungs. Dr. Beale doubts the extent of this; and I should place the greatest weight on the criticism of so accomplished an anatomical observer. I have no personal observations to record on this point; my confirmatory evidence was based on the observations of Sikorski, who announces the discovery of a plexus in the air-vesicles, which, from his description, presents the closest analogy to the origin of lymphatics in other parts, and which he has traced also through the bronchioles. Whether this be accepted or not, we may, I think, fall back on the fact that there is a delicate nucleated membrane in the walls of the air-vesicles, which may serve as the origin of this growth, and which is allied to the connective tissue series, this being again allied—and indeed more than allied—to lymphatic structures; it being shown by Sertoli and Schmidt that the latter in their embryological development proceed from the former. I have gone into these details of explanation about the name because, as Dr. Moxon has well remarked, names should not be loosely used. The name lymphoid, as it is commonly employed—and I observe that it is still employed by many—denotes a resemblance, but not an identity. The degree of resemblance may be a question, and in this respect it varies in different specimens. Even when the grey granulation proceeds from a true lymphatic structure the identity of structure between the new growth and the tissue in which it originates is destroyed; and notably in this peculiarity, that a lymphatic gland is vascular, while a tubercular growth is absolutely or nearly absolutely non-vascular; but the resemblance in tissue to a greater or less degree remains, and sufficiently so, I think, though this may appear in a different light to others, to justify the retention of the name. Dr. Williams thinks that the resemblance is so far destroyed that nothing but an overcrowded mass of corpusculation is present. I should hardly venture to reassert my own opinion that there is a reticulum also, were it not that he has stated that fibres are also found in older specimens, and that Professor E. Wagner has also affirmed that much of what is generally recognised in Germany as tubercle is a reticulated lymphadenoma. This brings me to one of the points involving the greatest difficulty raised in this discussion. I do not mean a personal difficulty, for I do not wish to enter into any special pleading; but a difficulty which meets everyone who attempts to define the series of new formations, in which a somewhat similar structure appears, from one another, if we look merely to their histological characters. It was a difficulty which I intended to express by stating that the characters of the new growths in acute tuberculosis were distinctive but not specific. This phraseology may meet with criticism, but by it I mean to express that their general characteristics distinguish these formations from *simple* inflammatory processes in the lung and other organs; but they are not specific—that is to say, they are more or less closely shared by formations occurring in other diseases—glanders, typhoid, leucæmia, and it is stated in other chronic inflammations, in some syphilitic growths, and in the class of lymphosarcomata, and lymphadenoma. With some of these my acquaintance is but small, as with glanders; but it must be admitted, from Cornil and Ranvier's description, that there must be, histologically, very little difference between the appearances which this disease produces in the lung as

regards the implication of the perivascular and peribronchial sheaths and tubercle occurring in these regions. Of syphilis also I can say but little; but I would say that during the past fortnight I have looked through the drawings and descriptions of many of the authors who have described secondary syphilitic growths, and I can find little or nothing corresponding with any close approximation to tubercular formations in the lung, except in one by von Baerensprung, of probable syphilitic disease of this organ. There are scattered masses of cells and nuclei imbedded in fibrous tissue; but these are less dense than in tubercle proper, they are more widely separated by fibrous tissue, and they occur in little groups. I do not wish to dwell on finer distinctions, though I would make the same remark of the appearance of the base of a chancre. Here, also, at least in some specimens which, thanks to the kindness of Mr. Arnott and Dr. Gowers, I have been able during the past week to compare with the lungs of acute tuberculosis, I find such differences that if I had met with these appearances in the lungs I should have called them suppuration and not tubercle. The cells diffused through the tissue are, individually and collectively, larger than in tubercle; they are not so fused with the basis substance. They appear more isolated, and again they occur in scattered groups, between which is proliferating connective tissue. Here, again, it is a question of degree, the variations in which it is almost impossible to express verbally. Billroth and Wagner have, however, described a true cytogenic tissue at the base of chancres, and I accept their statement. In leucæmic growths, especially in the liver and kidney, there is the greatest difficulty, I would say impossibility, of histologically distinguishing between them and the grey granulations in the same situation. Of the appearances presented by the lungs when affected by this disease I have no experience. In typhoid again, at least in the general infiltration of the intestine, the resemblance to the cytogenic tissue found in tubercle is so close that, histologically, it would, I think, in many cases, be almost impossible to distinguish the tissue at the base of the ulcers, in these diseases, from one another; and the resemblance is still greater from the fact that in typhoid you may have multiple disseminated small growths, as Wagner and Hoffmann have shown, in the liver, peritoneum, lymphatic glands, and air-passages. Indeed, as Virchow long ago remarked, anatomically as well as clinically, the diagnosis between acute tuberculosis and typhoid may be a matter of the extremest difficulty. Here, even in well-marked diseases, we have a whole group of very similar changes of structure. And I would go further. I would say that in nearly all new formations arising in the so-called connective tissue you may have almost identical appearances, but at different stages; or, as Dr. Beale has well put it, in the earliest periods of growth it is impossible to differentiate one bioplasm from another; and in some instances this may extend to later periods of formation. At any rate, in the connective tissue series, the products of inflammation may at certain periods very closely resemble the processes of morbid growths of very different kinds, and the difficulty of expressing these differences is at times extreme. Hence I said that I would give no dialectical definition of tubercle. I believe it would be almost impossible to frame any definition even of the histological changes in common suppuration, in which the attributes predicated of it might not be equally applicable to cancer; and again I have preparations of cancer of the lung which in some respects present a close resemblance to tubercle; while Dr. Bastian has affirmed the same ascending series, with no line of demarcation, for the peritoneum. No one can affirm more strongly than I do the absence of histological specificity for tubercle. Such absolute specificity is denied also etiologically in every phase of its history, except the hereditary tendency, and how far back this reaches it is impossible to say, for when we know family histories it is traceable further than in statistical hospital inquiry; but that the disease may originate *de novo* under various unhealthy influences, none of which can be called specific, is a fact which I think no one can deny; while as to the diathesis M. Pidoux at least asserts that it may be the expression of any diathetic constitution when the primary manifestations of this are exhausted in successive generations. I do not adopt this mode of expression, but it conveys in some cases an approximative truth. I said in my introduction that I should abstain from etiological considerations, and must still pass them by; but I wish to express my opinion that we have no more right to attribute to tubercle a specific form than to attribute to it a specific structure. At least, if we do, we exclude from the disease a vast number of otherwise similar structures, which in some cases predominate in its manifestations. Take the illustration of acute tuberculosis, and I would ask where in the lungs would you draw the line between the varieties of granulations found there. They differ from one another in structure as a whole, but they contain one structure common to all, and common to all the manifestations of the disease throughout the body; though here again the same differences are observable in different tissues, for in some, as in the intestines and in the vascular sheaths, the mode of growth differs as much from what is observed in the peritoneum as it does between the peritoneum and the lungs. You must, I believe, take the disease as a whole, and then I would state my conviction that the diffused growths which occur in it are of the same nature as the circumscribed masses; and, if this be true, the definition of the grey granulation as the sole form of tubercle is too arbitrary to express the phenomena of the disease. I have no wish to add to the confusion of this intricate subject, but I think that we may as well look the logical impossibility of framing a dialectical definition based solely on the histological characters of any single general disease fairly in the face and admit it. Histological identity is one feature necessary to prove the identity of similar growths at the same period; but it alone does not prove identity, it is only the collective characters and their further changes that enable us to discriminate them, and even here we are often in difficulty. Take multiplicity of anatomical changes, even when combined with structure, and we have it in a vast group of new formations, in some of which, besides tubercle, it is sometimes apparently of an infective kind, as in leucæmia and lymphadenoma. The tendency, to a greater or less degree, characterises at least nearly all the diseases of the connective tissues, including even the process of suppuration; but yet, as a practical fact, we may distinguish most of these diseases from one another. Where I think we shall err is in pushing any single feature to its extreme. Take, for instance, suppuration and tubercle. The resemblance of tubercle, in its constituent elements, to pus, was, fifteen years ago, affirmed by Virchow, and even his classical figure of a typical grey granulation differs but little, except in the size of the cells, from a small nodule of commencing suppuration. Years before that Dr. Williams stated that no boundary line of definition could be drawn between tubercle and inflammatory processes, a proposition which he has recently reasserted, and with which I fully concur. Is there, however, no difference between them? Is every suppuration tubercle, and every tubercle suppuration? The question may be absurd, but anyone trying absolutely to state their differences in all stages would find this, I believe, an impracticable task. He must recognise diseases by their broader features, and this is what I have attempted to do in discussing this question of the relation of tubercle to phthisis. I have dealt with tubercle as a disease, and I have affirmed my belief that the sole form of its anatomical manifestation is not the grey granulation, but that it occurs in other forms. Now the question meets us, firstly, is it distinguishable from other and recognised diseases? In the majority of those which I have enumerated, though in some cases the pulmonary manifestations may be similar, we have other criteria in nearly all. But perhaps the greatest difficulty that can meet us will be in syphilis, typhoid, and leucæmia; for isolated specimens of the two last-named may, I believe, be found which, when placed under the microscope, would be indistinguishable from tubercle. I admit that the question of the relation to phthisis of these may be at times very difficult; and I at once admit that I have no positive definition to give, partly because I have had few opportunities of examining destructive changes of the lungs occurring in these diseases. In one case, after typhoid, the granulations resembled the softer forms of acute tuberculosis. In all the cases of phthisical patients with a past history of syphilis coming under my observation, the appearances in the lung differed in no respects from those of ordinary phthisis. In one case which I recently met with presenting syphilitic gummata in other parts of the body, there were a few similar bodies scattered through the lung, and these were

very distinct from any appearances seen in phthisis; but there was no destruction of tissue—no phthisical disease. I have not, however, been able yet to subject these to microscopic examination. The argument of the non-specificity of tubercular new formations is, I think, pressed somewhat unduly if we say that the disease is, except in the form of the grey granulation, undistinguishable from other diseases. In the first place, the majority of those quoted are either more or less specific in their origin—as syphilis, glanders, and typhoid,—or have, as in leucæmia, other distinctive features. When we eliminate these, we have little remaining with which phthisis can be confounded except some of the processes of inflammation. I have admitted before, and I shall have to repeat, how great is the affinity here, but it is an affinity only to be taken practically in a special sense. Inflammation, as a process undergoing evolution, does three things—it either resolves, or it suppurates, or it passes into a chronic stage, sometimes ulcerative, sometimes indurative. The first two may be excluded. The question lies in the chronic stage, and may be answered from two aspects. The first is the anatomical: as regards ulceration in ordinary chronic inflammation, it also is in the main suppurative, and the tissue is infiltrated with cells, large, more loosely packed, and differing in actual appearance from the growths of tubercle. Moreover, it is not preceded by caseation, as in tubercle, and the vessels grow in it and are not so directly destroyed by the growth. As regards indurations, though a nuclear and cell growth appears in these, it is less dense, and passes far more rapidly into fibrous tissue. These, again, do not undergo caseation. When caseation occurs as a consequence of inflammation, it is due, in the vast majority of cases, simply to retention of preformed pus—it is not the first immediate change in the cells of new formation. It is said that caseation is common in the lung because its structure facilitates retention of inflammatory products; but when we look at other glands where retention is even more easy, as, for instance, the mamma, the parotid, and the liver or kidney, do we find simple chronic inflammation attended with this nuclear growth and caseous change *combined*? Even pus is probably long before it undergoes the latter change. In most indurations or other nuclear growths of the kind, which we know as simple chronic inflammation, it hardly ever occurs, if at all. I wish to be distinctly understood that I am not speaking of all caseous matters found in the lung—I am only speaking of the changes in the growth which are said to be not specifically definable from processes of ordinary inflammation. Of the origin of the diffused caseous matters in the lung I have already spoken, and shall have again to refer to them; but I do not know, either from my own observation or by that of others, of simple chronic inflammations producing growths of precisely the same nature as those in phthisical lungs with the same dense growths of reticular structure, not suppurative, and with the same vital tendencies. To call these in the lungs, therefore, *mere* chronic inflammation, is to state an opinion of their nature little supported by analogy. The boundary line, I admit, may be indistinct, but the broader features on either side differ to a marked degree. That nuclear growth does occur in inflammation, and does occur in some chronic indurations (whose inflammatory nature is less distinct, and is denied by some) may perhaps be considered as proved, as in such cases as early stages of cirrhosis and of the granular contracted kidney, referred to by Dr. Bastian. Such appearances, however, are not common, and certainly are not the predominant features of the fibroid thickenings in that disease, but are on the whole very exceptional to any marked degree in them. They do not undergo caseation; they do not indurate in the same manner, and, as far as I have seen, do not present any true resemblance to those which are found in the walls of the alveoli in acute tuberculosis and phthisis, and the resemblance is only on the side of induration, and not in the tendency to caseation. And I would ask, are we to take these exceptional appearances as an adequate ground for stating that phthisis and tubercle are not a definable disease? Again, there is an etiological side to this question. The mere existence of "chronic inflammations," with the exception of these two diseases last quoted, is comparatively rare without constitutional or local weakness or mechanical or chemical causes. In cases, however, where these are not proveable, as in chronic catarrh of certain mucous membranes—and of these, in relation to the lungs, I will especially quote chronic bronchitis, which in an otherwise healthy person may last for years without producing any growth significant of phthisis,—it is the old argument, as raised by Laennec and Louis, that the most persistent inflammation of this kind was insufficient to produce phthisis. In the stomach the chronic catarrh of hepatic congestion is rarely attended by enlargement of the lymphatic follicles. In phthisical people it is so very commonly. Chronic dysentery presents the nearest analogy, and forms one of those diseases where the boundary line between irritation of the lymphatic apparatus, as seen in tubercular and in non-tubercular conditions, is the least defined; but the vital character of the growth differs, for caseation is the exception in dysentery. There are intermediate stages on either side not accurately defined, for tubercle may soften so acutely as to resemble suppuration, though caseous change is rare in inflammatory products except in its presence. I only point out that the broader features differ, and clinically a great proportion of the chronic inflammations appear in persons to whom that ill-defined condition, a tubercular or scrofulous condition, is attributable; and when this is not present there is usually some other form of constitutional cachexia; but the inflammations in the former class have characteristics, not absolutely definable, but different from the latter. In the inflammations of the serous membranes we have perhaps one of the best contrasts: we have a chronic pleurisy without tubercle, and a chronic pleurisy with tubercle. A chronic pleurisy in itself always affords the gravest ground of suspicion for a constitutional state in the background,—Bright's disease, or cancer, or tubercle; but the first-named presents no special growth; the latter presents growths similar to the grey granulation, and which, until Dr. Bastian's new position was introduced, have been almost invariably regarded, with the exception of Andral, as being of this character. To sum up, I would say that the so-called chronic inflammations of the pulmonary tissues are most commonly attended with other evidences of tubercle, and are very rare except in its presence, and that they then present many marked distinctions from the processes of inflammation not so associated. Another question remains behind. Do the formations which we recognise as tubercle because characterised by the bodies which we know as the grey granulation, represent pathologically more than one essentially distinct constitutional disease? This is the question which has been raised by my friend Dr. Bastian, and argued by him with such great ability. Now, though I have argued that such bodies are not the sole form in which tubercle may appear, I admit they form its most distinctive character; and therefore I started from its structure in investigating the other changes found in the lungs. I think, also, that we may generally admit that the grey granulation is not usually produced or imitated very closely in the other diseases of the lymphatic class which have yet been classified, so that except these we have only what we have hitherto regarded as one. Now this formation appears in the disease which we know as acute tuberculosis, most forms of phthisis, and certain inflammations of the serous membranes, in which it is very seldom found alone. Does its presence signify under these varying circumstances many diseases or one disease?—diseases, I mean, as different from each other as leucæmia, or glanders, or lympho-sarcoma, or lymphadenoma are in turn from one another or from what we call collaterally tubercle. If I understand Dr. Bastian's argument aright, they may. I understand that he means that there are granulations in ordinary phthisis having identical naked-eye appearances and histological structure to those occurring in acute tuberculosis, but which have yet an absolutely different pathological signification. He adduces also illustrations of the same character from a granulation disease localised in the peritoneum, hitherto known as tubercular peritonitis, but which he regards as again different—that is, having no necessary pathological affinities to the two former. Dr. Bastian, therefore, questions the consequences of my reasoning from the grey granulation as occurring in acute tuberculosis being applied to define tubercle generally. According to him the grey granulation is only to be called tubercle (if the name is to be retained) when it occurs in acute tuberculosis. The same identical anatomical form and structure occurring under any other conditions may be another disease not yet named, or to be called granulation.

Now I would for a moment call attention to the fact that this is not Virchow's definition. Virchow's definition was of the grey granulation in the abstract, wherever found, and the definition in question is, if Dr. Bastian will allow me to say so, a second arbitrary one engrafted on a previous arbitrary one (using the term arbitrary in the non-invidious sense in which he applies it). The argument is not, however, unfamiliar to me. I have long thought that the largest outcome of Niemeyer's views would be that there is no tubercle except acute tuberculosis, but as an anatomist I have felt the combination of anatomical form with anatomical structure of these granulations, coupled with their pathological affinities and their vital tendencies, to be an insuperable objection in my own mind to accepting this doctrine. The distinctions of acute tuberculosis on which Dr. Bastian relies are mainly these: simultaneity of affection of a great number of organs, and therefore involving multiplicity; and acuteness of course. Now, on all these points I would venture to assert that the disease, as we have hitherto known it, presents very great variations. In M. Empis' book and also Colin's and Wunderlich's cases I would observe that these excellent clinical observers show a series of successive invasions of different organs, often attended with intervals of remission, and extending over comparatively considerable periods of time, and that the characteristics of the disease vary with these variations of site. There is a cerebral form, a pulmonary or acute asphyxial form, and an abdominal form. Secondly, that multiplicity is also very variable. I hardly know what Dr. Bastian will accept as acute tuberculosis, seeing that he excludes Bayle's cases of granular phthisis from this category. Still, however, I would point out that a disease in the adult running the course of acute tuberculosis may, as in a case recorded by MM. Hérard and Cornil, be limited to a single lung; and even in the multiple disease I am acquainted with three other recorded cases where, in addition to other lesions, one lung alone was affected, the other remaining free. What, however, is the degree of multiplicity necessary for the recognition? On this point I would, even at the risk of undue prolixity, quote the results of an examination which I made nearly two years ago, and without any special object, except to illustrate the general pathology of the disease, of 61 cases, illustrating chiefly the pulmonary manifestations of what has usually been regarded as acute tuberculosis in the adult, all being above ten years of age, and only 2 below fifteen, except two ages not stated. In all but one the lungs were affected, the solitary exception being the combination of tubercular pleurisy with tubercular peritonitis. In 7 cases the data are uncertain; in these cases the lung was the sole organ. In 7 two organs alone were affected, in 16 cases three organs, in 12 four organs, in 9 five organs, in 6 six organs, and in 1 seven organs. Dr. Bastian lays stress on the meningeal affection, but in any shape where brain complications are recorded (though in all tubercular meningitis is not described in the current terminology of the present day), the cases amounted only to 28 of the whole number, though in 4 more it was probable but not certain. This is much below the proportion of cerebral affections in the whole class, my data being collected for another object; but they show, I think, that meningeal affection is not necessary to the recognition of acute tuberculosis as a disease—a fact which Dr. Bastian will, I am sure, admit. In respect to multiplicity, again, I would for a moment call the attention of the Society to the data existing for ordinary phthisis, when we know that multiple lesions are common. For a moment I would advert to the cases attended by myself: In acute tuberculosis (8 cases), in 2 cases the lungs alone; in 3 cases, two organs; in 2 cases, five organs; in 1 case, seven organs. In acute pneumonic phthisis (45 cases) there were 10 where the lungs, with or without the pleura and bronchial glands, were affected alone. In the others, reckoning the former collectively as one, there were in 11 cases, two organs; in 11 cases, three organs; in 5 cases, four organs; in 5 cases, five organs; in 2 cases, six organs; and in 1 case, seven organs affected. In 42 cases of chronic phthisis the lungs and pleura were affected alone in 4 cases; in 17 cases, two organs; in 9 cases, three organs; in 10 cases, four organs; in 1 case, five organs; and in 1 case, eight organs. Now, these represent the minimum, for the notes of the examination of all the viscera were not always perfectly recorded; and, in one or two, where the lungs are tabulated as alone affected, I find omissions of the larynx, and even once or twice of the intestines. Very similar data may be collected from other authors: thus Cless, in phthisis in the adult, found the disease limited to the lungs alone, in 35 out of 146 cases, or nearly 24 per cent. Dr. King Chambers, however, found this in 41 per cent. Age, however, exercises a great influence on this; Cless found the same limitation in only 3 out of 20 children, and Barthez and Rilliet in 23 out of 265, or less than 9 per cent. Tubercle in the child is multiple more commonly and to a greater degree than in the adult—a fact which may be explained in various ways, the most plausible hypothesis being, in my opinion, the greater irritability of their lymphatic tissues. I must, however, on these data demur to Dr. Bastian's opinion, that the existence of tubercle can only be affirmed by its multiplicity, or that tubercle cannot affect a single organ. In any organ I believe that the local manifestation may be acute enough to kill the patient without the secondary implication of other organs; and this is sometimes the case, particularly in acute pneumonic phthisis, where the inflammatory lesions largely predominate. How far the meninges can suffer absolutely alone is a point on which I can give no positive assertion without fuller research. Barthez and Rilliet record one such case, and Dr. Gee mentions one, where the minimum amount of caseous matter found in each lung was the sole other lesion present. Again, as regards duration, I find in 55 cases of acute tuberculosis, from different authors analysed without any reference to this discussion, that 20 extended over more than two months. Empis gives a mean duration of thirty-nine days, the extremes varying from seven to sixty-five days, though Wunderlich records a case fatal in thirty hours. The possibility of a long duration of a disease characterised by the grey granulations when limited to the lungs was affirmed by Bayle, and numerous instances are given by other authors, one of them lasting nine months, to which I have myself seen a parallel, though here the peritoneum was also affected. I cannot for my own part doubt that a certain chronicity may attend this affection, while, indeed, in one case by Empis it was shown to lapse into the course of chronic phthisis. Nor is it only acute and fatal. There are a few but tolerably distinct cases of recovery, and some where, after partial recovery, both chief sets of changes which the granulations undergo have been found—in some induration, in others caseation. I admit to the fuller degree the peculiar course often assumed by this disease; it has been enough to cause everyone to classify it as a variety, but I gravely doubt whether it can be precisely defined in children from ordinary tuberculisation. Nor in the adult is it so widely separated from the course of acute pneumonic phthisis. I say this advisedly, since even in my own classification I found great difficulty in determining which cases in some instances to classify in either of these categories. Nor are the granulations in this disease always of the typical grey granulation form in all organs. I will not weary the Society with the wider data than my own which I have collected on this point, but in nearly as large proportions as those already stated from my own observation, the yellow and caseous are recorded in the lungs by other observers; and I would therefore only state that these confirm my remark that the grey granulation is not the only, and in many cases not the most common of the granulations found in the lung of what, as a clinical disease must, I still venture to think, be regarded as acute tuberculosis. Dr. Bastian and the Society will, I hope, pardon me for not entering minutely into the discussion of the artificially produced disease in the rodentia. I could only repeat what I have already laid before the profession as to the similarity of this disease to acute tuberculosis in man. I would only remark on three points—firstly, that however minute descriptions may differ as to some organs, the granulations in the peritoneum have such an identity of dissemination and structure that, coupled with the multiplicity of the disease, they are in themselves almost conclusive. I would also remark that this disease is not always one slowly evolved, creeping on in recognisable stages from organ to organ. In one of my cases death occurred in six days, with a minimum implication of four organs, and in two others in twenty-eight and twenty-nine days, with a minimum implication of four and five organs, in all ex-

clusive of local effects, or of the implication of the neighbouring lymphatic glands. Dr. Bastian and Dr. Crisp, however, state their objections to considering this disease tubercular on opposite grounds—Dr. Bastian that it is not acute enough, Dr. Crisp that it is too rapid for ordinary tuberculisation. Dr. Bastian appears to think that too much stress has been laid on the histological character of these growths. When I stated my belief in their tubercular nature, I put this, the last, as a question of proof. I stated "that it rested on a broader basis of analogy"—that is, rested on the general or constitutional affection. I stated, "it is not a question of the lung alone, or of the liver alone, or of the lymphatic glands, or the spleen, or the omentum, or the intestines considered simply. It is a question of general disease, producing in all these organs growths which, if they occurred in man, would be considered tubercular," and that as no other disease was known producing similar results, I concluded, strange as it might seem, that they must be classed under this category. Into the many etiological questions connected with this subject I cannot enter, except presently to allude to one which has been raised in this discussion, how far indifferent caseation may be an origin of tubercle. To return for a moment to the question of the pathological identity of the grey granulation found in acute tuberculosis and ordinary phthisis, I can only assert my belief in it, and that, though acute tuberculosis differs in many of its manifestations, these differences are in many cases determined by the age of the patient, or by a rapid multiplicity of lesion. In other respects I think that the disease, etiologically and clinically, shows too great an approximation to ordinary phthisis to enable us to classify it separately. There is one other point to which I would allude. To confine the term tubercle to acute tuberculosis is almost to exclude tubercle from the diseases of adult life. It is so rare that even in a clinical hospital admitting a very large proportion of acute cases, one may wait months, I may almost say years, at times, without meeting with a typical example, and it is to affirm that the grey granulation when multiple in the child is a different disease when less freely disseminated in the adult. In discussing the presence of the grey granulation in ordinary phthisis, I wish to state distinctly that though I do not regard it as the sole manifestation of the disease, yet it is its most characteristic feature, if we put aside for the moment the theory of its secondary origin from infection, and nearly every observer admits its almost constant occurrence. Thus Rindfleisch, who separates every other anatomical change from it, only found it absent in two cases of acute phthisis, and in a few of phthisis after measles; and in relation to this subject I would quote an older writer, Broussais, who, biased as he was by theories of inflammation, and who, as Dr. Williams has pointed out in his invaluable analysis of his experience in his work on Consumption, had the strongest personal grounds for opposing Laennec, yet sums up his experience in the following words:—"During three years of observation in this immense theatre (a military hospital) I have opened all the men sacrificed by phthisis, and I have only found one with an ulcer of the lungs without tubercle, and this was due to a foreign body. Tubercles, always tubercles! This is the most general and the most constant feature of resemblance." We may demur to Broussais' idea of what tubercle was, but he found something in the lungs of phthisical patients always present, and that something was different from what he found in ordinary inflammation. Allow me for a moment to ask your attention to the tables drawn up by myself of the different kinds of granulations found in the lung. I have omitted nothing that could be called phthisis, except two cases of old fibroid induration of uncertain origin, and one of acutely ulcerative bronchopneumonia. Now of the forty-five acute cases pneumonic infiltrations existed in forty-four, grey granulations in twenty-nine, and other forms of granulation (representing the softer forms found in acute tuberculosis) in fourteen, and visible pneumonia alone in two—("the acute general infiltration"). Now all these last sixteen but one had secondary affections of one or more organs of a nature ordinarily considered to be tubercular; a larger proportion than was found in those where the granulation was present, whilst a secondary affection was absent in five; but in two of the latter and one of the former the state of the larynx is not recorded. Of the forty-two chronic cases induration was present in twenty-nine, and was excessive in twenty; pneumonia was present in twenty-three; recent grey granulations in thirty-one. In eleven cases they were absent, the lesions being indurated and caseous or soft granulations, mingled in some with pneumonia; but in the cases where they were absent a secondary affection existed in all but two, where the appearances were doubtful. They were absent also in two of the cases where grey granulations were present; so that here again, as far as these numbers go, the multiple lesions were scarcely less common in the absence of recent grey granulations than in their presence. Here, therefore, in the absence of the distinct grey granulations, we have strong evidence of a multiple or constitutional affection. Then arises the question, can we not recognise tubercle except as the grey granulation? To say that we cannot is to deny its metamorphosis on one side into fibrous tissue, and on the other into caseous change. I believe that no one will deny either of these, and in some cases of phthisis the production of recent grey granulations shortly before death is a matter of accident. What we have to look to in this class is the probable pathenogenesis, the origin of indurated and caseous granulations; and, knowing the tendencies of tubercular growth in both these directions, we may, I think, conclude that they are tubercular. In fact we know the former as obsolescent tubercle; are we, when we meet with indurations, to ignore the fibroid change and call them chronic lobular pneumonia? More diffused indications may, as I stated before, arise sometimes from tubercular growths, sometimes from mere chronic pneumonia; but the latter is different from the former, and I still believe that it is rare except in the presence of granulations of a tubercular character. I would also state that in those where the grey granulation was absent I made in nearly all an examination of the other forms of granulation present, and in all that I did so examine (though I cannot quote the exact proportion of these) I found the same growth that occurs in the grey granulation and in the softer forms of granulation in acute tuberculosis. This is my ground for the statement that in all the cases of phthisis which I have examined I have found, both in granulations and in the diffused form, growths identical in character with those found in acute tuberculosis, and that in the vast majority of cases there was a multiple disease affecting other organs. Is this multiple disease different from the multiple disease in acute tuberculosis? It is scarcely so in its multiplicity numerically considered. It is not so as far as the lesions go in the different organs affected. Here, however, we are met with the question of infection, but on this I must dwell briefly. It has been known since the days of Laennec that tubercle tends to multiply, but the question at the present time is, can it be produced in the human subject by indifferent caseous products, or by any inflammatory change not associated with a peculiar liability of constitution? I strongly doubt both. I have already alluded to the rarity with which ordinary inflammatory products undergo this change except under special circumstances. The evidence of caseous glands serving as the sources of this infection is, to my mind, after reading Schüppel's observations on the nature of these glands, only evidence of a secondary infection from a primary tuberculous change. You may get a tuberculous gland secondary to any common irritation, in a predisposed subject; that is, a carious tooth or a cutaneous disease of the head may give rise to a change in the nearest gland of a tuberculous nature. And I believe that what we thus see externally takes place in the lung: any irritation of the tissue may, in the presence of local or constitutional predisposition, give rise to secondary growths, diffused or circumscribed, which constitute tubercle, and which may be the source of further infection, and that with or without antecedent caseation, though this stage and that of softening are most favourable to the change. I have no wish to ignore the evidence of other non-tuberculous caseous changes acting in a similar way, but then the granulations radiate from this as a focus, and the question is, will they arise without this predisposition? Such cases are, however, few, and in the majority of those where secondary infection is reported, the primary change is tuberculous in its nature, and of this I have seen a marked instance where the bronchial glands became caseous secondarily to an empyema, and acute miliary tuberculosis occurred in the opposite lung. As

regards the caseous changes in the lung which are supposed by many to be the source of the infection, I have attempted to show that these are not a simple inspissation of pus or retained secretion, but a death of tissue due to a particular growth. I do not call the caseous matter tubercle in these diffused areas, much of it is pneumonic, but it is pneumonia running a particular course in the presence of tubercle, and I think it open to the gravest doubt whether it is the caseous matter, as such, or the growth which is the source of the further infection. I expressed this opinion in relation to the rodentia, and it has been more fully expanded by Dr. Sanderson, with whose views in this respect I entirely concur. I would say one word about the often repeated statement that these caseous nodules are often mere accumulations in the smaller bronchi. I have fruitlessly, in earlier days, when I believed this, spent much time in the dissection of bronchi to come upon them; I have taxed the ingenuity of instrument makers for knives and scissors to penetrate to the finest ramifications, but I have not been able to find such conditions in the sense in which they are spoken of as a gradual inspissation of tenacious mucus forming the first stage of this process. A caseous nodule of tubercle surrounded by induration, presents the greatest resemblance to a bronchus; and when it is softened in the centre, a bristle can be passed into the branches, because they necessarily communicate. But this appearance, which I also used to describe in the terms often employed, is not in the majority of cases a mere inspissation in a bronchus. It is an area occupied to a greater or less extent by a tuberculous growth, and often including smaller bronchi, but it is not in my opinion a mere inspissation in the interior of these. I had intended to dwell on these points and give some further illustrations when I introduced the subject, but I had to pass it briefly by, and can only give this further explanation now. Inspissations do occasionally occur in larger tubercular bronchi—bronchi with a tuberculous growth in their walls; but the majority of caseous nodules found in the lung are not, I believe, due to this cause, but to changes in the lung-tissue. I must demur also to the opinion that this caseation is due to mere pressure. The most intense exudation of acute pneumonia does not produce it, nor does any other pressure with which I am acquainted. I must turn now to another difficult point, perhaps the most difficult in this question—the relation of tubercule to inflammation. But I have little to add to what I have stated as my belief. The question of the origin of the disease in a lymphatic gland represents, briefly stated, to my apprehension, the origin of the majority of cases of tubercle found in the lung. That tubercle may arise from blood changes I have no doubt, but at any rate my belief is, that it is a lymphatic growth, excited by abnormal local or constitutional conditions, or probably, in the great majority of cases, by both combined. I cannot admit on such evidence as we possess that, although these modes of origin are apparently different, the disease itself is essentially so. I would ask whether the disease excited in the lymphatic gland by a carious tooth, in the child of a phthisical parent, is essentially different from the tubercular meningitis in another child of the same parent, arising without apparent exciting cause? For my own part I cannot think so, and if later in life another member of the same family becomes phthisical after a pneumonia or a catarrh, I confess that I see in all these the manifestations of the same disease. Unless chronic pneumonia in the lung, of which I know almost nothing apart from tubercle, is different from chronic inflammations elsewhere, I would assert that these changes, though with great affinities to a chronic inflammation, have a peculiar but not specific stamp of their own. So great is this affinity that everything which has been known as tubercle has been called simply inflammatory. Broussais did so with a qualification; Cruveilhier, Gendrin, and others have done so with various modifications. Reinhart affirmed it of all forms, and said that even the grey granulation was only an induration of grey pneumonia, and that the so-called tubercles of other organs were only multiple disseminated inflammations. Andral affirmed it also for the grey granulation in the lungs and peritoneum. Empis makes the same assertion, both these authors separating it from what they call tubercle or caseous masses. The modern German school, agreeing with the late Dr. Addison, precisely reverse these opinions, so that what one set of observers call tubercle another set assert to be inflammatory, and what the latter call inflammatory the former call tubercle. Is there no way out of this confusion? I believe that there is but one, except that proposed by Dr. Bastian, to which I shall presently allude. I believe that it is to recognise tubercle as the result of irritation of a particular set of tissues under certain constitutional conditions. We cannot accurately define all the peculiarities of these conditions. This is wanting to our definition of the disease, but on the anatomical side the growths have, I think, characteristic features. The tendency to assume the round circumscribed form is a general feature of these tissues: it is the type of one of their normal physiological developments, and it recurs under pathological conditions; but the diffused form is nearly equally constant though not equally characteristic, and this both physiologically and pathologically. And as we admit their identity in the former case, we must also, I believe, in the latter. We have analogies enough in other constitutional diseases, as Professor Buhl has pointed out. We have a diffused and a circumscribed series of growths in leucæmia. We have the same in syphilis; we have the same even in common suppuration; we have the same in lympho-sarcoma, and even in cancer. It may be said that this is only to recur to the definition of Broussais, that tubercle is only an expression of inflammation of the lymphatic tissues; but what Broussais affirmed without the knowledge of these tissues which we now possess, and while he used the term tubercle in a different sense to that in which we apply it, the proposition is proved for a large series. The only question is, does analogy justify its extension to the remainder? I admit that we have not precise proof of its origin in the diffused growths; this yet awaits anatomical elucidation; but I think that we have strong grounds for this belief. This question has been already fully dwelt upon by Dr. Sanderson as well as by myself, and my views, I believe, correspond on this point with his. It is not any inflammation of a lymphatic. No one would call a suppurating bubo tubercle. It is the results of irritation in certain constitutional states which give to the growth its peculiar characters. To my apprehension this idea is not productive of confusion, but the reverse; but to take the alternative, if I may again quote Dr. Bastian—who dreads the chaos which this prospect seems to open to his apprehension,—I would ask, is any chaos greater than the present? We are in doubt, at least after his statement, if we have one disease or many included under those at present classified as presenting the one common anatomical and tolerably distinct feature, the grey granulation. Nay, even I think that on his premises it might fairly be disputed if the one disease we know as acute tuberculosis ought at least to be divided. On his showing no one can say certainly, or feel sure, what the different granulations in the lung in ordinary phthisis signify—whether, even when grey granulations are met with, they are in all cases the same disease, or whether what we have all been calling tubercular inflammations of serous membranes have any pathological affinities to each other or to any of those to which I have alluded. Dr. Bastian proposes to start afresh in the inquiry, by doing away with the word tubercle altogether. The idea is not a new one to me. I persistently adopted it in my own notes for some three or four years, and I still commonly do so in my descriptions of lungs. But I think this procedure hardly necessary, nor even then can we start easily with any common terms. I think we could hardly, even as far as I have ventured to comment on Dr. Bastian's views, define the acute disease "granulia" as one. There are a variety of different appearances in the granulations present which are characteristic. In some cases, or even tissues, one is more common than the other. What degree of multiple affection, or what length of duration, or what combination of symptoms is necessary to constitute it? I have often pitied the "intelligent student," to whom we have appealed as our test of the definitions of our views, who, fresh from the reading of Niemeyer's text-book, turns to find out in the dead house what is tubercle. I should, I think, pity him still more if I have to tell him, when he asks what Laennec and Louis, Rokitansky and Virchow, Stokes and Williams and Walshe meant by tubercle, that there is *no tubercle*. "Nous avons changé tout cela." And yet still more when he is told that identically the same appearances to the naked eye and to the microscope may mean different

diseases; that there is no pathological affinity between an acute granulie with granulations of varying appearances in the same and different organs, and a granular pneumonia with similar granulations, and with caseous and fibroid products, and a caseous pneumonia with the same granulations and fibroid changes, both associated with caseous or ulcerative or granular changes in the serous membranes, larynx, intestines, liver, and genito-urinary organs; and a granular peritonitis resembling some forms of the complications of the former, yet not the same disease, but passing by insensible gradations into cancer. I believe that if this plan were adopted the first effect would be in the attempt (perhaps *mutato nomine*) to re-establish the unity of most of these affections. For my own part, though I did for the purpose of inquiry cast aside the name, I do not think that we can do so in our literature and description without such a cataclysm of our pathological ideas that I for one cannot advocate it. I do believe that between these diseases there is such a close etiological, pathological, and clinical connexion as to demand at least a terminology implying in some degree their association in a common category. I think it better to express this association, as to my mind it is really expressed, by the word "tubercle" (in use during three centuries), notwithstanding the doubts and obscurity which have hung over it, rather than to seek a new term or set of terms about which for a generation to come there will be even, I think, more disagreement. We may express the phenomena of tuberculisation in the terminology of any current pathology. We may call it a neoplasm, an exudation, an inflammation, a deposit, what we will; but it is a *disease*, and in the vent of our pathological ideas it will want a name. To my own ideas its formations are most nearly allied to, though not identical with, the phenomena of inflammation; but you want some term to distinguish it, as I believe it is distinguished, from most common inflammations, and that not in the lung alone, but in other organs. The disease is, I believe, most easily recognised by the presence of recent grey granulations, but I do not believe that it can be defined as limited in its pathological effects solely to this special form. It is distinguished by vital characteristics, by a growth destructive of vessels, and by a consequent tendency to early necrosis, though capable in some cases of more or less permanent development. I have ventured on some remarks adverse to a demand for definitions of anatomical change specific for each disease, which I believe would render all pathological classification, if carried to its full extent, impossible. Imperfectly defined words are the *eidola fori* of science; but too limited definitions, excluding phenomena of identical characters, are not less so; and I believe that we exclude a large part of the phenomena of a tubercular series of formations if we limit the use of the term to the grey granulation. We are in this case in no worse position than in almost every other disease—our definitions of disease are only abridged descriptions. There is scarcely one extant with which I am acquainted that precisely excludes the phenomena of other diseases, but they are sufficient for recognition. I have only attempted to give such an account of the growths in phthisis as may answer the former purpose. My own position, setting aside the use of a name, was a simple one. I started with the inquiry whether I could find in the diseases classified under the name of phthisis (with the exceptions before alluded to) such differences of anatomical structure as would, in my opinion, justify me in establishing these as the basis of clinical investigation. The result of this research has appeared to me to be negative. I find in all one common series of growths, conducing on one side to destruction, on the other to induration of lung, and I find these corresponding to similar formations in acute tuberculosis; both also forming common phenomena of a disease tending to multiplicity, the manifestations of which, in different organs, present similar characters. If, therefore, many different diseases are included under the name of phthisis, their anatomical classification has (if my observations are correct) yet to be sought for. This position involves, after all, but a slight modification of that previously existing. It is that similar growths occurring simultaneously in the same organ are probably of identical nature, and is in accordance with the aphorism of Virchow, before quoted. No one can recognise more fully than I do the variations in the clinical features and anatomical characteristics of these diseases, but they are all mutually interchangeable, and pass by indistinguishable gradations into one another. Some of these may perhaps be well expressed in different terms. The expressions caseous pneumonia and fibroid phthisis are unobjectionable as expressing certain appearances; but I object to the term scrofulous pneumonia, if this signifies mere caseation without the intervention of a morbid growth, for without this it scarcely exists in the lung—or if it signifies a disease having a different anatomical basis to fibroid phthisis, or if it may not at one time or another pass into the other without changing their essential nature. Both diseases are attended by the same morbid growths, but evolving differently under accidental conditions—in the one into caseation and softening, in the other into fibroid induration. The only objection to either of the former terms consists in the fact that they leave undescribed the granulations which are almost invariably present; but their close relationship is, I believe, a point never to be forgotten. Among the drawings which I exhibited were one of typically fibroid and another of typically pneumonic form of phthisis, occurring in two sisters, daughters of a phthisical father, who both died in hospital. The one (the younger) had been under my care for years, the other died after a few months' illness. I have seen a very similar contrast and association in two brothers. Neither the whole of the fibroid change nor the whole of the caseous matter is of distinctly tuberculous nature—that is to say, neither in all circumstances directly arises from a tubercular growth, but in the vast majority of cases both are associated with it. Both simple ulceration and simple fibroid may occur in the pneumonic portions without the apparent ulceration of these growths, but they are, if present, especially the former, of the extremest rarity, except in their presence in other portions of the lung. It is, however, to these growths that a great part of the destructive changes, and a part, but a varying part, of the indurations in the lung, are due. The purely inflammatory changes may vary in extent, and the fibroid may also; but these growths are almost invariably present, and until some further distinctions are established I have felt that I could only regard these growths as of the same nature. Being only to any true extent simulated, as I believe, by the growths in typical tubercle of the child, I venture still to call them tubercular. In this I have no wish to be dogmatic; and, if I have maintained my own reasons, it has been after a full consideration of those of others. There are no subjects in medicine which would, I think, so dispel a spirit of dogmatism and exclusive adherence to one's own opinions as the study of the history of phthisis, on which such differences have existed and do exist, among the greatest men of the past and of the present, as may well make any one doubt the justness of his own observations, and the accuracy of his conclusions; and much as I felt the honour done me by the request that I should open this discussion, I shrank from it personally, lest what I believe to be the truth should suffer from the imperfect exposition which I should be able to give. I do not regret, and I hope the Society will not regret, that this discussion has taken place. It has, at any rate, elucidated new views of the greatest importance, and though I have ventured to dissent from some of them, their expression will, I believe, stimulate to further inquiry, which, in this Society, cannot fail to lead to the discovery of fresh truth. As regards those which I have stated, I wish to be distinctly understood as disclaiming all priority. I have endeavoured to work out this question as a whole, without any desire for early publication, and much of what I have stated as my opinions have been, in some form or another, expressed by others; but the varying shades of opinion have prevented me from going into the details of these views, or referring to their work in the terms which that work deserves.

THE governors of the Bradford Infirmary held a special meeting last week to elect two members to the hon. medical staff, in the places of Dr. Nicol and Mr. Broughton, resigned. Dr. A. W. Smith, the only applicant, was elected hon. physician. There being no applicant for the post of hon. surgeon, a resolution was carried, leaving it in the hands of the Board of Management to call a meeting of the governors when they might deem it necessary for the purpose. There was some discussion, in which the desirability of an alteration in the rules for elections to the staff was hinted.

THE LANCET.

LONDON: SATURDAY, APRIL 19, 1873.

WE have already presented the profession with between forty and fifty columns of matter reporting the discussions of the General Medical Council. And we have in reserve ten or fifteen columns more, which we have resolved, out of consideration to our readers, to keep *in retentis*, as they say in Scotland. We may use them some day, by way perhaps of punishing our readers, if we should be in an unamiable mood. But if we should not be overtaken with such unchristian feeling we promise to spare them. Forty or fifty columns is not bad; and it may be considered that, if a judicious pruning-knife had not been applied, and pity for our readers had not come into play, the report might have reached to the figure of a hundred columns. Life is too short for such modes of doing business. The result of such discussions is nearly *nil*. The Council sat nine days. It would be a very moderate estimate of the cost of the sitting to put it at twelve hundred pounds. Various incidental inconveniences were doubtless occasioned by the prolonged absence of eminent teachers and practitioners from their important spheres of duty. And yet it would be difficult to say whether anything has been done by the Council in the way of perfecting the modes of medical education or the tests by which their efficiency is to be ascertained. The Council boasts of being, above all things, a Council of Medical Education; yet the state of the question of medical education has been in entire abeyance, as far as the Council is concerned, since 1871. In that year it was ordered that copies of the Council's Report on Medical Education should be sent to the licensing bodies for their consideration. In the Report of the Committee on Medical Education for this year (1873) it is remarked that "no return has been received, in reply to any of the Council's recommendations, from any of the licensing bodies to which they were sent in 1871." The Report also tells how some of the recommendations of the Council had been carried into effect by nearly all the licensing bodies; while others (such as the division of materia medica into pharmacy and therapeutics) had not been carried into effect by any of them; and others still (as the teaching of pathological anatomy in a separate course and the enforcement of more regular class examinations) had been carried into effect by a few only of the licensing bodies. Five or six years have elapsed since this subject first engaged the attention of the Council, and it has now to report that the bodies take very much their own way and disregard the recommendations of the Council. We are not deciding between the bodies and the Council. It is probable that the bodies are right in their determination to maintain their own methods of teaching. Some wise words were spoken by Sir DOMINIC CORRIGAN, Sir W. GULL, and others, in the discussion of this Report, concerning the advantage of leaving different teachers and schools to educate on their own plan. A controversy arose as to the comparative importance of education and examination. Such a comparison is unwise. The truth is that the excellence of any method of examination consists in its being a fair and sufficient test of the character and degree of the education to which the student has been subjected. The advocates of examination do not maintain that there are not right and wrong ways of teaching; they only maintain that the great thing the Council has to do is to concern itself with the examinations which test the education given in the schools. Teachers and students will in the long run adapt themselves to these; and knowledge will be the more efficiently and easily acquired if freedom is allowed in regard to the time and manner of its acquirement. This view happily prevailed in the Council; and, on the motion of Dr. QUAIN, the Council resolved not to trouble the bodies further with detailed recommendations as to courses of study. Opinion is setting in most strongly in the direction of little more than a very general indication of the best course of study, and in favour of a tutorial and practical method of teaching. Lecturing, it is true, is still fostered under a system of protection and prescription, notwithstanding Mr. GLADSTONE's severe remark to Dr. LYON PLAYFAIR that he had never attended a professor's lecture but once; but even the Medical Council, with all its power of obstruction and all its prejudice in favour of red-tape in medical education, will not long be able to prescribe minutely courses of study. Proofs of knowledge it may exact, but it will have to leave students to get knowledge where they can, when they can, and how they can.

The finances of the Council are in a flourishing condition. The income for 1872 was £6106 16s. 7*d.*, or £1169 15s. 4*d.* more than in 1871; a result due chiefly to two circumstances—a great increase in the number of registrations last year, which we have already intimated, and a single and not very long meeting of the Council.

We regret that the curtailment of our report makes it impossible for us to give Dr. STOKES's speech in favour of the Council being empowered under any future legislation to register qualifications in State Medicine. Whether we agree with Dr. STOKES or not, he always speaks with an earnestness and force that compel respect for his opinions. He said the University of Dublin now granted a qualification in State Medicine to its graduates, and he urged other bodies to do likewise in consideration of the enormous and increasing importance of preventive medicine. In the Dublin University no fee is demanded for this degree, and no curriculum is prescribed. The subjects for examination are Law, Sanitary Engineering, Pathology, Vital and Sanitary Statistics, Chemistry, Meteorology, and Medical Jurisprudence. The Council accepted Dr. STOKES's motion.

We must now take leave of the Council for the present. The work done has been exceedingly slight; the waste of time has been enormous; and the demonstration of the Council's unfitness and incapacity to reconstruct the examining system of the country is complete. The fault is not in its individual members, but in its own organisation, which must for ever ensure every question being looked at from *nineteen* points of view.

THE Public Health Bill which has been brought into the House of Commons by Sir CHARLES ADDERLEY, Mr. FRANCIS

SHARP POWELL, and others, and is now printed, is of remarkable interest. It is drafted with unusual care, and displays a knowledge of the subject highly reassuring. It gives us hope, indeed, that the policy adopted by the Local Government Board for the initiation of the Public Health Act of 1872 will not be permitted to pass unquestioned in the House by men who have both the position and the knowledge to make their opinions felt, and who represent there the labours of the Royal Sanitary Commission. The present Bill deals mainly with the amendment of the law as to nuisances, and there is but one point in it, among its miscellaneous provisions, that we are disposed to carp at; for the rest we have little but unqualified praise. To take the point to which we object first. It is in Section 13, which provides that the Local Government Board may from time to time require from all medical officers of health, and from all medical officers appointed under the laws for the relief of the poor, such reports of particulars respecting sickness within their respective districts as the Local Government Board may think fit. It provides also that it shall be the duty of all medical officers of health within their districts, and under the directions of the Local Government Board, to make returns as to sickness under treatment in or in connexion with any institutions within their respective districts established for the treatment of the sick, and maintained wholly or partly by voluntary subscriptions, or by endowments, or grants from the Consolidated Fund, or by local rates; and the trustees, governors, managers, and officers of any such institutions shall furnish to such medical officers of health all reasonable and needful assistance in the preparation of such returns.

These provisions, in so far as they relate to medical officers of health not receiving any part of their salary from the Government, would defeat themselves. There is no clause compelling the medical officer of health to carry them out; it would be most unjust, after he had made specific terms, and was being remunerated by his local authority to do one kind of work, that he should be called upon by the Government to do another kind of work, of the extent or onerousness of which he had no previous knowledge, without remuneration; and it would be the worst of policies for the Local Government Board to intervene between a local authority and one of its officers.

However desirable the returns which are to be asked for may be to the Local Government Board, that is no reason why they should be asked for arbitrarily. Let them be asked for in a proper fashion, through the sanitary authority itself; or let the Government attach a proper fee to the preparation of the returns, and the Treasury pay the fee. Why is it assumed that the medical man is to be the scape-goat of all classes of sanitary reformers? Surely politicians ought to have learned that the time has now passed for this kind of thing.

We cannot enter into the different provisions of the Bill in detail, and we would refer our readers to the Bill itself, which will well repay perusal. We may add here, however, that it is commendably brief, having regard to the large number of excellent provisions in it. The Bill provides that the provisions of the Nuisances Removal (Amendment) Act, 1863, for England shall extend to milk and to tea, and amends the procedure as to unsound food. It provides also that the word "nuisance" under the Nuisances Removal Acts shall include: Any house or building without an adequate supply of wholesome water, or access to an adequate supply thereof within a reasonable distance; — any inhabited house or building, or any inhabited part thereof, admitting rain or other water so as to be injurious to health;—any well or pump, whether public or private, used or likely to be used by human beings for drinking purposes, or for the preparation of human food, the supply of water from which is from any cause unwholesome or injurious to health;—any pool, ditch, gutter, watercourse, privy, urinal, cesspool, drain, or ashpit, in such a condition from any cause as to be a nuisance or injurious to health, and any drain-inlet requiring to be trapped and not properly trapped;—any animal kept in such a situation as to be a nuisance or injurious to health. If these provisions alone could be obtained the promoters of the Bill would deserve honour. But there are other excellent provisions to follow. The Bill extends the right of complaint under the Nuisances Removal Acts to any inhabitants or owners of premises aggrieved or injuriously affected, and removes the disability of owners to complain by reason of non-residence. It extends the provisions of Section 27 of the Nuisances Removal Act, 1866, as to offensive trades; but we do not understand that it meets the case of trade nuisances such as that at Battersea of refuse-sifting close to the filter-beds of the Southwark and Vauxhall Waterworks Company. It further makes provision for closing parts of a house unfit for human habitation as well as a whole house. Thus much as to nuisances.

Among the miscellaneous sections, it provides that sanitary authorities shall not exercise the power given to them under the Sanitary Act of 1866 to erect hospitals without obtaining first the consent of the Local Government Board; an excellent provision, which would prevent the commission of many follies and much waste of money. It provides also that persons may be admitted on payment into the hospitals of local authorities or Poor-law hospitals for infectious diseases, if the authorities shall think fit, and in the latter case without being pauperised and suffering the disabilities therefrom. It has important clauses for the extension of the provisions of the Sanitary Act of 1866 as to houses let in lodgings, at the discretion of the Local Government Board, to any sanitary district; and as to the extension of the power of making bye-laws as to buildings under the Local Government Act of 1858 to several sanitary districts, enlarging the scope of the bye-laws. It provides also for the ventilation of sewers, for imposing a penalty upon sanitary authorities who do not properly carry out works of cleansing they are bound to execute, for the analysing of water by a person whom the Local Government Board may appoint, for the purchase of water-mills and weirs, and for a few other matters of less moment.

Is there any hope that the present Parliament will do honour to itself by passing a Bill so thoroughly good in its main features? The provisions of this Bill must substantially be assented to sooner or latter; and let us hope sooner. If its promoters carry it through this year they will deserve a whole Westminster Hall or Trafalgar-square—we beg pardon, a whole Hyde-park (for it is to the sward

and the trees that sanitary reformers are relegated)—to themselves, with sculptors such as would make them as pleasant to the eyes of a future generation as they would be pleasant to the thoughts of the present.

THE Committee of the Medical Council on the subject of the Education of Women as Midwives, Dispensers, and Nurses, attempted too much, and, as a consequence, has done less good than otherwise might have been effected. It is monstrous to take up the time of the Medical Council with the question of dispensers and nurses. It would be quite as reasonable to take up the time of the Council with the education of women as cooks—a subject of great importance, no doubt, in the interest of the sick, but entirely beyond the province of the Council.

The education of midwives is a different matter, and bears so vitally on the preservation of the life of women in childbed that it cannot properly be ignored. We lately commented on a shocking case in which a midwife continued, with the help of brandy, to pull away at an arm-presentation till the woman became fatally exhausted; and such kind of cases are of too common occurrence. As a matter of fact, a large number of women are attended by midwives, and the practice has a certain sanction from both law and custom. Not only so; it is very desirable that medical men should be saved from the drudgery of very cheap midwifery. It is very doubtful indeed whether the physical strength of women is equal to the duties of a large obstetric practice. The affirmative view of this question is too readily assumed; but it has to be proved. Be this as it may, a very large midwifery practice is injurious in a high degree to men who have all the other duties of medical practice to do; and it is so especially among the poor, the hygienic condition of whose dwellings terribly enhances the bad effects of loss of sleep and tedious waiting. Sir ROBERT CHRISTISON gave it as the result of his large observation that nothing was more injurious to the health of rural medical men than heavy midwifery duties. Even in the interest of medical men, then, we think it very desirable that women should be educated in the practice of midwifery, and as a matter of prudence and humanity there cannot be any doubt about it.

The proper management of a woman in ordinary labour, and especially when labour becomes unusual, requires intelligence and medical knowledge. Dr. FLEMING is generally very shrewd in his view of things, but he underrated the function of an accoucheur—as one watching a process he could not assist. The condition of a parturient woman involves a variety of fine questions, partly surgical, partly medical, and partly physiological; and the immense reduction in the mortality of lying-in women and of new-born children is due to the scientific way in which their situation has been studied of late years. The difficulty is, that women cannot be fitted for this duty without their acquiring more or less of medical and surgical training, which seems to many the way to flood the profession with women-doctors. We think the profession generally will not trouble itself with this view. The fact that many women are too poor to be attended by doctors is a sufficient reason for insisting that women who practise as midwives shall give some evidence of fitness. The profession has more to fear from the ignorance of midwives than from their education, and we are disposed to think that the best discussion during the late session of the Council was that on this question. We hope for much good from the publicity given to certain plans of teaching midwives, especially that carried out by Dr. SINCLAIR of Dublin and detailed by Dr. STOKES, and from the way in which public attention has been directed to the whole subject.

Medical Annotations.

"Ne quid nimis."

"RAILWAY SPINE."

AN interesting case of compensation for personal injuries—the cause of Saunders *v.* the North-Eastern Railway Company—was tried at the late Leeds Assizes. The plaintiff, who was manager of the Lancashire Insurance Company in Leeds, was in receipt of an income of £300 per annum. On Jan. 25th last, as he was journeying from Leeds to Harrogate in a first-class carriage, the train ran off the rails against an embankment, and the carriage in which the plaintiff was seated capsized, causing him to be thrown with great violence against the opposite side of the carriage, his head and neck striking against one of the arms of the seat. The plaintiff, who was stunned at the time of the accident, was still suffering from the effects of spinal concussion. There was pain and tenderness in the cervical region of the spine, and a difficulty in moving the neck; darting pains in the head, haziness of vision, loss of mental power, and a great irregularity of the pulse. Dr. Bealey of Harrogate, Mr. Wheelhouse of Leeds, and Professor Erichsen, were examined on the part of the plaintiff, and stated that he would require six or twelve months for complete restoration to health. On the part of the company, Mr. Nunneley and Mr. Jessop stated that in their opinion the plaintiff was now able to return to his work, while Mr. Samuel Hey and Dr. Clifford Allbutt considered that health would be completely restored in three months. The jury returned a verdict for the plaintiff, damages £750.

On the 11th ult. an inquest was held at Blackburn on the body of Mr. John Jepson, a town councillor, who had died from injuries the result of a railway accident nearly six months previous. On the 21st of August last Mr. Jepson was travelling on the Lancashire and Yorkshire Railway by an excursion train, which came into violent collision with another train at Paulton. Mr. Jepson was very much bruised on the back, shoulder, and elsewhere, but his injuries were apparently not serious, and he managed to attend to his business till September 7th. From that time till his death on March 2nd, he got gradually worse, exhibiting all the symptoms of spinal concussion, great pain and tenderness along the spine, twitchings and startings of the limbs, shooting pains in the head, and gradually supervening paraplegia. The immediate cause of death was an attack of pneumonia against which he seemed wholly unable to bear up. The post-mortem examination revealed the pneumonia aforesaid, considerable softening of the dorsal region of the spinal cord, an enlarged and fatty liver, and a large scrotal hernia. The jury were of opinion that the death of the deceased was the result of the railway accident, and they returned a verdict of manslaughter against the engine-driver of the train. It is not often that spinal concussion is the subject of a coroner's inquiry, and as there seems even now to be no little doubt as to the genuineness or otherwise of that condition of the

spinal cord which has come to be designated as "railway spine," we have thought the above case worthy of being recorded. The widow of the deceased has since recovered substantial damages from the Railway Company.

HEALTH OF THE NAVY.

THE statistical abstract of the health of the navy for the period embraced between the 1st of July, 1871, and the 30th of June, 1872, just issued, shows that, compared with the preceding twelve months, there was a reduction in the ratio of cases entered on the sick-list to the extent of 42·9 per 1000; in the invaliding rate the decrease was 1·7 per 1000; and the reduction in the death-rate was to the extent of 10·4 per 1000. The high death-rate during the preceding twelve months was, however, altogether exceptional, being attributable to the loss of Her Majesty's ship *Captain*. The reduction in the death-rate during the period embraced in the abstract, as compared with that of the preceding twelve months, exclusive of the mortality occasioned by that catastrophe, was ·3 per 1000.

It is gratifying that Dr. Mackay should be able to report that, as regards the ratio of cases entered on the sick-list, the iron-clads compare most favourably with any other class of sea-going vessel employed in the ordinary duties of a man-of-war.

The force generally was very healthy. On the East Indies station a good deal of sickness was occasioned by service in the Persian Gulf, in the Gulf of Oman, and in the Mozambique Channel.

On the West Coast of Africa and Cape of Good Hope station the sick-rate was one of the lowest on record.

On the China station also the squadron was very healthy, the reduction in the ratio of cases entered on the sick-list, compared with the preceding twelve months, being to the extent of 159·5 per 1000. The vessels employed on the southern division of the station—i.e., in the East Indian Archipelago, suffered more than those stationed in China and Japan.

There was nothing of importance in the medical history of the other stations, or of the irregular force.

HOSPITAL OUT-PATIENT REFORM.

THE "Governing Bodies of the London Hospitals," who have just received a letter upon the management of their own affairs from the "Committee of the Hospital Out-Patient Reform Association," must surely feel inclined to apply to their correspondents the question which Macaulay puts into the mouth of Appius Claudius:

"Have they no crafts to mind at home, that hitherward they stray?"

The letter calls upon the aforesaid "governing bodies" to "attend" to the following resolutions, which were passed "after careful consideration," upon the 6th of March—namely: 1. "That each out-patient, at every visit to the hospital, shall be seen personally by one of the medical or surgical staff, and that no unqualified student be permitted to prescribe for out-patients." 2. "That a lay officer attached to each hospital be instructed to see that the charity is not abused by persons being admitted as out-patients who are well able to pay the usual fees of practitioners, or to obtain medical attendance by provident dispensaries or otherwise." 3. "That patients shall no longer be tempted to crowd to hospitals by the offer of medicine gratuitously." After these resolutions, the writers go on to say, "We are *therefore* (*sic*) of opinion that no medicines should be supplied to out-patients at hospitals, except to persons who have been in-patients, but that advice and prescriptions be alone given"; and they wind up by some dogmatic and dictatorial sentences which it is not necessary to quote. We must, however, in the interests of the public and of common sense, deal with some portions of their singular manifesto.

The first resolution, we need hardly say, contains a proposition with which we cordially agree, and suggests a regulation which is already in full force at every hospital which has even a pretence to proper management. It is perhaps a pity to suggest that the case is otherwise, and that the possible exceptions are the rule; but this may pass without further notice. The second resolution would be distinctly more valuable if those who make it would point out in what way it would be possible for the proposed official to compass the end desired; and until this is done it would be just as reasonable to "instruct" him to "see," for example, that it did not rain while the out-patients were on their way home. But the third resolution requires especial notice. We refer to the proposal that out-patients should receive advice and prescriptions only. We saw recently a prescription for a six-ounce mixture, which had been dispensed by a chemist, and for which two shillings was charged to a medical customer. The value of the phial, cork, label, paper, and string, we leave to the imagination of our readers; but the value of the contained medicine was a small fraction less than the *forty-second part of a farthing*. To a non-medical customer the price would probably have been three shillings; but even if it had been only two the circumstance affords a sufficient answer to the proposition which the rider to the third resolution contains. To give prescriptions to out-patients would indeed be to put stones in the place of bread, and in lieu of fish to offer a serpent. It is almost a matter for congratulation that the letter to which we refer should contain this absurdity, which may at least serve to open the eyes of some who might otherwise have been disposed to shake their heads over its denunciations.

UNSOUNDNESS OF MIND.

THE remarkable case of Boughton *v.* Knight lately tried in the Court of Probate before Sir James Hannen, which we were unable through want of space to notice last week, illustrates very forcibly the difficulties of determining the question of sanity or insanity. In this case the testator had practically disinherited his children in favour of a person with no similar claim upon him, and they contested the will on the ground of his alleged mental incapacity. In support of this view, it was shown that Mr. Knight, the testator, was capricious, suspicious, cruel, and extremely eccentric in his conduct towards his children and his servants. On the other hand, it was urged that Mr. Knight was a man of sound business habits, that he had managed his estate greatly to his own advantage, and that his correspondence showed considerable mental capacity. The judge, in laying down the case to the jury, said that the whole question was whether Mr. Knight was of sound mind, memory, and understanding on January 27th, 1869, when he executed his will; they were not there to consider the justice or injustice of men's wills, but to ascertain whether the whole tenor and tendency of a man's mind empowered and entitled him to make a will. The law does not say that a man is incompetent to make a will by reason of his being influenced by capricious or frivolous, or mean, or even bad motives; a man might leave his property to strangers to gratify his spite, or to charities to gratify his pride. Whatever degree of mental soundness might be required for other acts—for responsibility of crime, for capacity to marry, for capacity to contract, for capacity to give evidence—he had no hesitation in telling them that the highest degree of all was required in order to constitute capacity to make a

testamentary disposition. A sound mind did not mean a perfectly balanced mind, for if that was so he feared few people would be capable of making a will. The question of soundness of mind was not one which depended on scientific or legal definitions, but it was a question of degree—an eminently practical question to be decided by the good sense of men of the world. The best test, and the test most to be relied upon, in such cases was the question, Did the testator labour under delusions? And supposing this question to be answered in the affirmative, they had then to consider what were the delusions which incapacitated a man from making a will. Sir James also adverted to the general bearing of insanity, stating that in very many instances persons can transact all their business properly if it does not turn on the specific hallucination from which they suffer. The jury, after five minutes' deliberation, found that when the will was made the testator was not of sound mind, memory, and understanding.

From the extracts we have given, it will be seen that the learned judge, following the example of many other eminent judges, recognises partial insanity—a doctrine which is opposed to the teaching of many psychologists.

A NEW CONTAGIOUS DISEASES ACT.

WE have received a pamphlet bearing the above title, which ought to satisfy, if they were sincere, the most violent of the opponents of the existing Acts. The author, who states that the system of the Acts has been proved by experience to be a real social benefit, notwithstanding its apparent hardship and its occasional interference with the liberty of the subject, proposes to extend the existing provisions by instituting or reviving the practice of examining soldiers, both on their admission to the service and at stated intervals afterwards; to impose a quarantine upon all syphilitic sailors, whether of the Royal or of the merchant navy, on their return from abroad; to enact that any man communicating disease to a prostitute should be pecuniarily responsible for her maintenance in hospital until cured; and, lastly, that syphilis, like physical incapacity, should be a sufficient ground for annulling marriage. To the first of these proposals there would, we believe, be grave objections on the part of the military authorities; the second is probably impracticable on account of the costly and complicated machinery of inspection and detention that would be required, and the third, on account of the door it would open to various abuses. The fourth may be said to be at least in partial operation; because the communication of a "loathsome disease" to a wife is recognised by the Divorce Court as an act of legal cruelty—while its communication to either husband or wife by the other affords, of course, *primâ facie* evidence of adultery. Still this is, at best, a tardy, difficult, and uncertain remedy; and we should gladly welcome an enactment that syphilis contracted after marriage should, *per se*, be a sufficient cause for the prompt dissolution of the union. In all other respects we feel that the author of the pamphlet is, at the very least, in advance of his time; and in one respect he has fallen beneath the dominion of a vulgar error. He is desirous to obtain equality between the sexes in the various matters to which he refers; and does not see that such equality is impossible. The woman renders it impossible from the moment when she prostitutes herself *for hire*. In those two words lies the whole of the question. If loose women were actuated by sexual desires only, or if women were in the habit of hiring men for sexual purposes, then the present "one-sided" Acts would be manifestly impossible. But the acceptance of hire, and the display of herself in the streets as being ready to receive hire, render the loose woman a public character, and entitles the community to exact from her the fulfilment of conditions to which no private person could be subjected, and from which she may at any time relieve herself by abandoning her public occupation. The landlord of a public-house is subject to visitation by the police; but, as soon as he retires from business, his house is his castle. It is no way a question either of sex or of morality that is involved; but simply and solely a question of the responsibilities to the public which are implied in the avowed pursuit of a public calling.

MODERN DRESS.

WE observe that Mr. W. B. Tegetmeier has been reading a paper before the National Health Society (whatever that may be) on "Modern Dress in relation to Health and Taste." As regards taste, Mr. Tegetmeier should have remembered a saying that is even too familiar for quotation; and he might certainly study with advantage Lord Jeffrey's admirable analysis of the connexion that must always exist between the fashions of the day and the prevailing standard of beauty. As regards health, he appears to have denounced energetically the compression of the most important organs of the body by tight-lacing, the compression of the toes by high-heeled boots, and the scanty chest covering afforded by ladies' evening dress. Alas! it is only too true that John Abernethy denounced the first evil—with whatever greater degree of vigour might be the expression of the natural difference between him and Mr. Tegetmeier, or might be gained by speaking about "guts" where Mr. Tegetmeier speaks only about "organs." We much fear that the case is hopeless, and that any oratory upon it is only wasted breath. Good old John was by no means the first would-be reformer in this direction; Mr. Tegetmeier is not likely to be the last. We admit all that is said, that fashionable dress is nearly always injurious to the health of the wearers, and that it is often frightfully ugly. We know to our sorrow that it is also inordinately costly. But we see only one prospect of a remedy. If the National Health Society would establish a *Magasin de Modes* under exalted and, if possible, under Royal patronage, would engage as saleswomen and attendants the prettiest girls to be obtained for the purpose, and would dress them in a way at once graceful, wholesome, and becoming, then they might hope to render themselves arbiters of taste, and to induce fashion to take hygiene under her sheltering wing. Anything short of this, and any amount of platform oratory, we hold to be simply and entirely thrown away.

THE PROGRESS OF SANITATION.

WE have received a most touching proof of the great progress and the wide diffusion of sanitary science. It is in the shape of the circular of a candidate for the office of inspector of nuisances; and we cannot find in our hearts to withhold any portion of it from our readers. It runs thus:—

"SIR,—Being a candidate for the office of inspector of nuisances, I beg to make a few remarks. Having for many years made the science of hygiene, or the guide to health, my especial study for the human family, I have been trying to carry it out; for in my rounds, which comprise a district of about twenty miles in * * * * * * * as a hair-cutter, &c., among gentlemen's and farmers' families, I make it my duty to explain, whenever I have an opportunity, the importance of sanitary improvements, especially among the dwellings of poor people in crowded and ill-ventilated houses—almost forming districts of pollution—from which places mostly emanate miasma and effluvia producing blood-poison, which flies like fire, and ends in fever, small-pox, and other diseases, which is taken up and dropped by dews in healthy places, thereby producing endemic which sometimes ends in epidemic, almost as a plague, which was the

case last year, puzzling even the faculty itself to know how it originated. I think those beautiful subjects ought to be the main lever or work of a sanitary officer's duty; and, if elected, I should do my utmost to rid places of the filth, and try more particularly to prevent surface-drainage (and this is most important) in places where many poor people have to get their drinking-water; I believe from this source emanate most of our fever cases.

"At the election I should be most happy to be severely catechised as to my proficiency as a candidate.

"Trusting to your vote, I beg to remain, Sir, yours obediently, "——, Hair-dresser."

We need hardly say that we wish the gentleman every possible success in his candidature, and hope that his meritorious efforts for the good of his neighbours may for the future be continued with the advantages of official position and authority. Our only fear for him is that the officials at Gwydyr House may dread lest he should know too much, and may refuse to sanction his appointment out of consideration for the feelings of the gentlemen who might be called upon to "inspect" his work. It is bad enough to have to deal with doctors who understand what they are about; but to have inspectors of nuisances of the same character would surely be more than Poor-law flesh and blood could bear.

THE YACHT "KALA FISH."

MR. COLLIS BROWNE has sent us a detailed description of a new yacht designed by and built for him, with a special view to the avoidance of sea-sickness. The designer indeed professes, as we understand, to pit his invention against those of Captain Dicey and Mr. Bessemer. We are not able to afford the space requisite for giving the principles and peculiarities of the vessel in detail, but may briefly explain that the floor of the bows of the ship is flat, and the upper part very acute, so as (according to Mr. Browne) to meet the angle of incidence of the water on its own plane, enabling the vessel to rise rapidly and at the same time to clear herself of any sea that strikes her forward. The motion is consequently progressive, and free from wave or splash. We are glad to congratulate Mr. Browne on his praiseworthy and practical attempt to remove one of the ills to which sea-going flesh is heir, and can quite understand that (to use his own words) "he feels a pride in showing that his own profession is capable of active utility beyond pure medicine, and that it can hold its own with other sciences."

PIGEON SHOOTING.

THE Committee of the Royal Society for the Prevention of Cruelty to Animals—a body which, although sometimes mistaken and extravagant, has done much good work of a kind that has distinctly elevated the national character—has just issued a well-drawn and well-timed protest against the so-called "sport" of pigeon shooting; pointing out the excessive cruelty attendant upon it, and asking for legislation which shall prohibit and effectually stop the practice of shooting at birds from traps. The protest has been sent, we understand, to every member of the Cabinet. We suppose it is too much to expect any good or useful action from an expiring Parliament and a beaten and discouraged Ministry; and we well know that the torture of hundreds of thousands of pigeons would be powerless to induce professional politicians to enter upon any course in which they might possibly be opposed by some of their ordinary supporters. The document to which we refer may nevertheless be a useful step in an agitation that must before long succeed. We have on many occasions expressed ourselves in strong terms about the brutal, cowardly, and demoralising practice in question; and we feel that public attention has only to be called to it with some persistence in order to place it in the same category with the bull-baiting and the cock-fighting of our ancestors.

THE BANK HOLIDAY.

WE cannot forbear a word of delight at the admirable way in which the new holiday has been kept. For ourselves, we were greatly impressed with the decorum and respectability of the people. The testimony of observers at the Crystal Palace is that there was nothing but good temper and good behaviour among the thousands gathered there. The family nature of the groups met there and everywhere, the obvious happiness of them, and the absence of anything like coarseness, to say nothing of drunkenness, make one think more highly of the people than some melancholy moralists would have us think. The test was the more valuable, as the preceding holidays had given ample occasion for the development of any drinking tendencies. We need not talk "shop" on the subject. It does not need a physician to see the immense good done to the people by a well-spent holiday. Few recent Acts of Parliament have been more justified by the result, and we would fain see it extended to the Custom-house and all Government offices.

YELLOW FEVER.

THE ports on the North-East Coast of South America are still occupied by yellow fever to a most alarming extent. Ships of all nationalities arrive at European ports having lost several of their crew from the disease, and in many cases reported, vessels have been compelled to put back after having started from Bahia and other places, the malady having suddenly appeared on board and proved fatal to a large proportion of the crew. Under these circumstances, and having regard to the fact that the disease may be said to be almost endemic in these latitudes, it is important that some plain code of precautions should be compiled and issued by the Board of Trade for the use of the merchant captains in our marine.

THE "HAMADRYAD" HOSPITAL SHIP.

THE annual report of this institution just issued shows that during the past year 374 in-patients had been admitted, and 2971 out-patients had received advice and medicine; representing an increase of 64 in-patients and 834 out-patients as compared with the previous year. The captains of many vessels frequenting Cardiff still decline to contribute to the support of the hospital; and, indeed, it appears that only £7 was subscribed from the shipping in the course of the year.

ROYAL LONDON OPHTHALMIC HOSPITAL.

WE are glad to learn that at a special general meeting of the governors of this hospital on Wednesday, the 9th inst., the very objectionable law which precluded a surgeon of the hospital from holding the post of ophthalmic surgeon to any general hospital was rescinded. The rule had, in fact, been evaded in various ways already, and the attempt to monopolise the teaching of ophthalmic surgery had completely failed as years went on.

THE TUBERCLE DEBATE.

THE important debate on this subject, at the Pathological Society, terminated on Tuesday evening last. We propose to reserve our final comments until next week.

ON Wednesday Professor Huxley took his chair as Lord Rector of Aberdeen University.

THE Bridgewater Board of Guardians, after having several times fined a person in the neighbourhood for neglecting to vaccinate his children, ultimately placed his case before the Local Government Board, with a request that the Board should furnish the guardians with an opinion for their guidance in similar cases. The reply received from Gwydyr House concluded as follows:—"The Board are not prepared to say that it is not open to the guardians to act upon their own judgment as to the expediency or inexpediency of carrying on repeated prosecutions against the same person after the guardians have become convinced of the failure of such prosecutions to procure the vaccination of the child. At the same time the Board must impress upon the guardians the importance of securing, as far as possible, the vaccination of every child; and they do not doubt that the guardians will use their best endeavours to carry out the law with that object in view."

WE are glad to observe that it is proposed by the inhabitants of Birmingham to present Mr. Sampson Gamgee with a testimonial in recognition of his great and unwearied efforts in establishing a Hospital Saturday for Birmingham. A large and influential meeting convened by the Mayor was held in the town last week, when the following resolution was proposed and carried: "That, in the opinion of this meeting, it is desirable to recognise the signal services rendered to all the medical charities of Birmingham by Mr. Sampson Gamgee, in promoting and conducting to a successful issue the first Hospital Saturday collection, by a public subscription, now commenced." A committee was appointed to carry the foregoing resolution into effect, and at the close of the meeting subscriptions to the amount of £200 were announced.

AT the half-yearly meeting of the General Council of the University of Edinburgh on Wednesday it was resolved to represent to the University Court that the restriction by which a gentleman who has got the M.B. degree is prevented from proceeding to M.D. unless he has passed in Greek, logic, and moral philosophy within three years after taking the former degree, should be removed so far as that he shall be allowed to appear at examination on those subjects at any future time.

DURING the week ending last Saturday the mortality from all causes in London and twenty other large towns was at the rate of 25 deaths annually to every 1000 persons estimated to be living. In the metropolis 2220 births and 1421 deaths were registered, the former having been 170 and the latter 243 below the average.

SIR J. J. TREVOR LAWRENCE and his sisters have presented £1000 to St. Bartholomew's Hospital, the interest of which is to be awarded to the best student in medicine and surgery, in memory of their late father, Sir William Lawrence, surgeon to the hospital.

THE *Rangoon Mail* informs us that cholera has made its appearance in British Burmah. In one village in the Rangoon district thirty-six persons have died of the disease. Great terror is manifested by the natives, who are deserting their occupations.

A SEVERE epidemic of diphtheria having broken out in the convent of the Sacré Cœur at Paris, the managers, acting on the recommendation of the surgeon, have closed the institution until October, and have sent the inmates and pupils to their respective families.

BARON LIEBIG is, we regret to say, suffering from severe illness.

PROFESSOR JOHN MARSHALL, F.R.S., is, we understand, a candidate for the office of Professor of Anatomy to the Royal Academy.

FROM several parts of the country we receive accounts of the successful results of the boarding-out system as applied to pauper orphan children.

THE ROYAL COLLEGE OF PHYSICIANS.

ADDRESS OF THE PRESIDENT.

GENTLEMEN,—In taking a cursory retrospect of the transactions of the College during the past year, it may be convenient to bring under your notice, in the first place, all that relates to the intercourse of the College with the Government and different national and other public bodies; and secondly, to call to the remembrance of the fellows the various proceedings which concern the internal organisation of the College, and the resolutions agreed upon for the purpose of perpetuating a worthy succession to the fellowship, and for maintaining the literary and scientific reputation of the College.

Very considerable and significant changes have been agreed upon, and we may confidently hope that the fellows will henceforth enjoy a larger share of the confidence of the members; and as the profession at large will have access to an accurate and authorised summary of all the important business transacted at our meetings, so as a public body the College will be better understood and less frequently misrepresented.

The relations of the College with the Government during the past year have continued upon the same satisfactory footing as has long subsisted. The College has had no favour to seek for, but has rendered a willing aid to the Government whenever applied to for counsel or other assistance.

Two reports on Leprosy have been made to H.M. Secretary for the Colonies in reply to his communications during the past year. That of Dr. Gavin Milroy is founded on eleven months' residence and observation of leprosy in Demerara, Barbadoes, Antigua, Trinidad, Dominica, and Jamaica, and its publication is looked for with much interest.

The Secretary of State for Foreign Affairs has transmitted specimens of condurango root to the College, requesting to be favoured with a report upon the reputed efficacy of the root in the treatment of cancer. These specimens were placed in the hands of several competent and trustworthy observers for the purpose of experiment, and the results unhappily compelled the College to return a report to Lord Granville announcing that the condurango root had been found quite inert in the treatment of that terrible malady.

The desire of the colonial medical institutions to connect themselves with our College has been manifested upon several occasions during the past year. Trinity College, Toronto; Dalhousie College, Halifax, Nova Scotia; and Bishop's College, Montreal, applied to have their courses of study recognised by the Royal College of Physicians as qualifications for admission to examination for the diploma. The Medical Board of Trinidad has made application through the Colonial Office requesting the College to undertake the examination, by sealed papers, of physicians wishing to obtain a licence to practise medicine in that colony. To this request the College gave a qualified assent, and prepared a plan to carry out the wishes of the colony, and this plan, mutually agreed upon, is about to come into operation. To the former applications the several Colleges have been informed that no definite answer can be given while the scheme for the formation of a Conjoint Examining Board for England is under consideration.

The College have also maintained their amicable relations and interchange of courtesies with other public and national bodies. It is well known that we are in possession of many interesting and valuable works of art, both pictures and busts, and the College have had the pleasure of granting a loan of some of their treasures to the Royal Academy, to be exhibited, with other specimens of the ancient masters, in the rooms of the Academy at Burlington House during the

past winter. The commissioners of the International Exhibition at South Kensington have also requested and received from us the loan of a set of most unique surgical instruments in the possession of the College, the exact date of which is uncertain, but certainly long prior to 1650. The commissioners of the International Exhibition have acknowledged the liberality of the College in the handsomest manner. The College also granted the use of their building for the meeting of the International Ophthalmic Congress which was held here in August last, and this favour has been acknowledged in terms of respect and gratitude. It was announced to the College by letter that a public meeting had been held at Folkestone for the purpose of erecting a statue to Harvey in that town, the place of his birth, and permission was asked and accorded that the committee appointed to carry out this object might hold a meeting in the College reading-room. This reading-room, well supplied with periodicals and recent medical and scientific publications, has been open for the use of all connected with the College throughout the year, and quite free of all expense to them.

I have had the honour of appearing as your representative at various meetings of the trustees of the British Museum, of the trustees of the Hunterian Museum, and of the trustees of the Tancred charities. I have also been called upon, *ex officio*, to take part in the election of the Woodwardian Professor of Geology in the University of Cambridge, in succession to the late distinguished and venerable Professor Sedgwick; and, as one of the trustees, to take an active part in the appointment of the Waynflete Professor of Chemistry in the University of Oxford, on the resignation of Sir Benjamin Brodie. On this latter occasion, it will give you pleasure to learn, one of our own fellows, Dr. Odling, was elected to that honourable office. The appointment of standing counsel to the College having become vacant in the course of the year by the elevation of Sir Roundell Palmer to the Lord Chancellorship, and of Mr. Geo. Denman to the judicial bench, I have exercised the privilege of president and nominated the late Attorney-General, Sir John Karslake, Q.C., and Mr. Arthur Townley Watson, of the Chancery bar, to fill the vacant offices.

Several circumstances relating to our domestic economy have occurred since I addressed you last year, and these ought to be brought under your notice. Our late Bedellus, abusing the confidence reposed in him by our Treasurer, had for a considerable period, by a well-contrived system of fraud and forgery, succeeded in misappropriating various sums belonging to the College to his own private purposes. Happily, a large portion of the losses which would have fallen upon the College funds have been defrayed by the Guarantee Society, who were security for the Bedellus on entering upon his office. The dishonesty of our officer necessarily demanded his immediate dismissal, and caused some temporary inconvenience in the transaction of the routine business of the College. I believe we have succeeded in obtaining the services of a most efficient and well-informed successor to the office in the person of Mr. Garner. The defalcations of our Bedellus caused our Treasurer to institute a strict scrutiny into the state of the finances of the College, and into the method which has been usually adopted in keeping the College accounts. This investigation and some other circumstances induced our Treasurer to ask the fellows to appoint a Finance Committee, and accordingly the Registrar, Dr. Sibson, Dr. Barclay, Dr. Munk, Dr. Lockhart Robertson, together with the Treasurer, were elected a committee for this purpose. I fear the labours of the Finance Committee may show that the expenditure of the College has for some years past been exceeding the income, and that capital has been drawn out to meet annual expenses. Should such prove to be the case it will be necessary for the College to adopt a more economical expenditure for the future.

The customary *soirée* was held last summer at the College, and was attended not only by the fellows and members, but also by a large number of members of other learned and scientific societies, and of men distinguished in the political and artistic world. In my former address I intimated my opinion how much this annual *soirée* tended to keep the College in a proper and dignified position in relation to other public bodies, as well as to promote friendly intercourse among all who are enrolled on our lists. I trust the report of the Finance Committee may not be of such a nature as to dictate the necessity of foregoing the *soirée*.

Those who have taken an active share in the affairs of this College for many years past have been painfully conscious of the large amount of additional labour imposed upon the Registrar beyond that required of him when he first accepted office; and they equally felt that this extra labour had been most admirably and cheerfully performed by that officer. The College, upon having this subject brought under their notice, became sensible of their obligations to the Registrar, and, by a complimentary resolution recorded in our annals, determined to offer him a present of 100 guineas, and a suitable addition to his annual honorarium.

The term of office of our representative in the General Medical Council having expired, it devolved upon the fellows to elect a successor; but the result has been that that high and well-deserved honour has been conferred for another quinquennium upon Dr. Risdon Bennett. It is needless for me to remind the fellows who attend our general meetings, or those who serve upon our Council, or those who have formed part of the committee to carry out the scheme of a Conjoint Examining Board, how largely that gentleman sacrifices his time and personal convenience in attending these meetings, and how ably he co-operates in conducting the business and promoting the best interests of the College.

One of the most interesting events in each year is the manner in which we commemorate our illustrious predecessor, Harvey. The Harveian oration last year was delivered by Dr. Arthur Farre, who most appropriately selected the subject of Generation, as exemplified in the celebrated exercises of Harvey, for the theme of his discourse. The orator informed us that it did not appear that this subject had been selected before, and then entered upon an elaborate and learned disquisition upon the state of knowledge on this subject from the time of Aristotle to Harvey, and upon the contributions made to elucidate this subject made by Harvey himself and by subsequent inquirers. All must remember the striking and remarkable passages quoted from Harvey forming the concluding paragraphs of an instructive and eloquent oration.

The Gulstonian, Croonian, and Lumleian lectures have been delivered by Dr. Robert Liveing, Dr. Radcliffe, and Dr. Barnes, who have sustained their reputation by discourses displaying erudition, elaborate research, freedom of thought, and clinical experience.

Many changes have taken place in the roll of the College during the past year. Fifteen new fellows have been elected, and six have been removed by death—namely, Dr. Aldis; Dr. Cammack; Dr. J. A. Gordon, F.R.S.; Dr. H. B. Leeson, F.R.S.; Sir Andrew Smith, K.C.B.; and Dr. Ormerod, F.R.S. All of these fellows worthily maintained the credit of their order: some, having completed a long professional career, died ripe in years and full of honours; others were cut off in middle age, and their removal from their sphere of labour must be regarded as a public loss. Among these latter I cannot refrain from especially alluding to the last of the names of deceased fellows, Edward Latham Ormerod. All who had the happiness of knowing that gentleman must have recognised in him a rare combination of extensive and accurate knowledge, indefatigable industry, great practical skill, and a character of singular gentleness and modesty, adorned by many social virtues. Fifteen new members have been admitted, and six have died. Eighty licentiates have also been admitted, while eight of the several orders of licentiates have died. Upon the whole, ninety-five new names have been placed on the College lists, and twenty have been removed by death; so that our numbers on the balance are increased by an addition of seventy-five to the College roll.

There remain three most important questions, having reference to the future of this College, to which it will be my duty to advert. I allude (1) to the reference by the fellows to the Council of the question of the mode of nomination of members for election to the fellowship. (2) To the desire of the College to promote the scheme for the formation of a Conjoint Examining Board in England. (3) The determination of the College no longer to regard our proceedings as secret, but to suspend in the College hall an authorised abstract of the "res gestæ" at each general meeting.

Let me touch upon these topics in the order I have mentioned them.

1. A feeling has long existed among those fellows who have been called upon to act upon the Council that when the duty of selecting a certain number of our members to be recommended for election to the fellowship devolved upon them, they were often placed in a most painful position. While the list of all the names of members was read over in the customary manner by the Registrar at the Council-table, and every councillor had liberty to propose the name of any member as fit to be recommended for the fellowship, the insufficient acquaintance of the councillors with members residing at a distance, with their attainments and their professional status in their respective localities, caused the greatest perplexity to those who were called upon, then and there, to vote for or against the individual proposed for nomination. Each councillor felt himself bound by the faith he had pledged to the College at the time of his admission, "that he would admit to the fellowship those only who are *distinguished* by character and learning," and by a similar and even more stringent injunction imposed upon the councillors in performing the duty of selection of members for nomination to the fellowship. With insufficient information a councillor often could not conscientiously vote for a member who had been proposed for nomination; and, although he refrained from voting against the individual, his mere abstention from voting acted prejudicially against the person proposed, inasmuch as it required the votes of a majority of the Council to secure the nomination of any member for election. From such circumstances, justice (possibly) may not sometimes have been done to those deserving of the honour of the fellowship. It is well, therefore, that this difficult question was referred for the further consideration of the Council, and it is to be hoped that, through the assistance of the fellows at large, and by the method recommended for obtaining more satisfactory information upon the merits of members selected for nomination, the revised regulations adopted by the College will diminish, if not entirely remove, some of the difficulties in the performance of an anxious, responsible, and somewhat invidious duty.

2. The College have been called upon to take further steps to promote the scheme for the formation of one Conjoint Examining Board in England, and have appointed four fellows (Drs. Pitman, Risdon Bennett, West, and Barclay) to act as representatives of the College in the Committee of Reference. This Committee of Reference have definite duties assigned to them in carrying into operation the scheme for the formation of a Conjoint Examining Board, and have recently presented a very elaborate and carefully prepared report upon the method of carrying out the conjoint examinations.

In some minor particulars the Committee of Reference have found it necessary to deviate from the strict letter of the scheme agreed upon by the co-operating medical authorities, and have been compelled to ask for your sanction to these modifications in the original scheme. In a question of such novelty, intricacy, and difficulty, it is essential that you should grant to your representatives a certain discretion, and accord to them a large amount of your confidence. Unless this be accorded to them, it would be almost impossible to carry successfully into operation a scheme which will increase public confidence in the profession, confer an immense benefit upon future generations of medical students, more firmly establish this College at the head of the medical division of our profession, and in the position which was so unhappily and unwisely renounced at the time of passing the Medical Act of 1815.

3. The last topic to which I shall allude is the resolution of the College to have an authorised written abstract of the proceedings of each general meeting of the fellows suspended in the entrance hall, as soon as practicable after the meeting. This resolution virtually establishes the principle that the College no longer desires their proceedings to be secret or unknown to the profession at large. For many years past the profession have obtained through the medical journals an imperfect and often inaccurate report of the proceedings of the College; and such inaccurate reports have necessarily led to much misunderstanding and misrepresentation. Our constituency formerly was a very small one, and those who were personally interested in our proceedings could generally obtain the information they required through their friendly intercourse with the fellows. But this state of things is now altered. By the institution of the comparatively new order of licentiates and by the increased number of members our constituency is much enlarged, and there has naturally grown up a corresponding increased desire to become acquainted with the proceedings of the governing body. All this is in accordance with the spirit of the age and with changes which are going forward in all our political institutions. The College have therefore wisely, in my opinion, assented to this principle of a publication of their proceedings in an authentic form, and to which all may refer who are interested in so doing. Although the College have now established this principle of publicity, I am not sure that it is judicious on the part of some of the fellows to act as reporters to the weekly medical journals and to provide them with *verbatim* reports of our proceedings, and not only with the names of the fellows who take part in any discussion, but also with the words used by them to express their thoughts. Gentlemen who venture to give such circumstantial reports incur a considerable risk and responsibility, and it is to be hoped that their personal predilections and opinions on any subject discussed in this library may not unconsciously lead them to give biased or partial reports of what takes place at our meetings. Hitherto, as far as I have read these reports, they have been truthful and impartial.

From this brief and imperfect retrospect of the various transactions in which the College have been engaged during the past year, I think it will be manifest that there exists in this ancient and venerable institution an active, progressive, living spirit, which is not content with merely proudly looking back upon an honourable past, but which is conscious of its responsibilities, and is willing and prepared to take an active share in everything which may tend to advance the science and practice of medicine and the welfare of the medical commonwealth. If this College has maintained a high position among the institutions of the country for three centuries and a half, I believe that, supported by the learning and scientific attainments of the fellows and by the wisdom and liberality of their acts, it may confidently look forward to an equally honourable and distinguished future.

INSTRUMENTS AT THE INTERNATIONAL EXHIBITION.

THE International Exhibition, which was opened on Monday last, contains a display of surgical instruments and appliances which cannot fail to be highly interesting to the medical profession. The instruments are arranged in the "West Theatre," which is on the balcony floor of the Albert Hall, a little to the west of the Royal entrance, and the whole of the theatre is devoted to them. At one time there was, it will be remembered, some difficulty with the principal makers, who objected to the power of rejection placed in the hands of the Committee. It was explained, however, that this power was absolutely necessary to prevent the admission of improper objects, and that it would be practically a dead letter in the case of makers of repute, whose applications for space would be granted as a matter of course. This explanation was accepted as satisfactory by the trade in general, but amongst London makers Messrs. Weiss and Son, and Coxeter, have held aloof, and are entirely unrepresented. Messrs. Arnold applied for space, but the case allotted to them was still empty on Saturday. Of surgical instruments proper, the chief trade exhibitors, taking them in alphabetical order, are Blaise and Co., Evans and Wormall, Hawksley, Krohne and Sesemann, Lynch and Co., Matthews Brothers, Mayer and Meltzer, and Salt and Son, all of whom have cases replete with examples of the highest skill and the most finished workmanship, alike in instruments for daily use and in those manufactured to meet the special needs of particular operators. Messrs. Blaise, and Evans and Wormall, also exhibit cases of old and obsolete instruments, and similar collections have been lent by the Royal College

of Physicians, the Royal College of Surgeons, the Royal Medical and Chirurgical Society, the Royal University of Berlin, University College, and by her Majesty's Commissioners, who have employed Signor Alessandro Castellani, of Rome, the well-known art jeweller, to make facsimile reproductions of the instruments discovered at Pompeii, including the famous speculum vaginæ. Signor Castellani has added to his copies a collection of old surgical instruments made by himself in his explorations among remote and ancient Italian villages. Mr. White Cooper lends Heister's "General System of Surgery;" Dr. Hall Davis "a collection of obstetrical instruments which belonged to the late Professor D. Davis"; Mr. Charles Hawkins, "instruments for the removal of stones from the bladder without cutting"; Mr. Prescott Hewett, "instruments for lithotrity"; Dr. Morell Mackenzie, "instruments for examining and treating diseases of the throat, including the original laryngoscopes of Babington and Avery"; Sir Anthony de Rothschild, "a circumcision-knife of the fourteenth century"; and Mr. T. Wormald, "surgical instruments for lithotomy which belonged to the late John Abernethy." These individual contributions are mostly of historic interest; but the absence of Messrs. Weiss from the exhibition has induced several members of the profession themselves to exhibit instruments which Messrs. Weiss have made for them, and which would have been more fitly shown by the firm. Among this number may be placed Dr. Allen, Mr. Greenway, Mr. Charles Hunter, with perhaps a few more; and there are also other individual exhibitors, to some of whom reference will be made hereafter.

We have no space in which to dwell upon the huge size and uncouth forms of some of the instruments of antiquity, or even to express compassion for those upon whom they were applied. It is sufficient to say that the contrast between ancient and modern instruments is at once pleasing and instructive; and that many of the latter seem to arrive at something very near mechanical perfection. We must content ourselves with a bare enumeration of the chief novelties shown by the best known makers, and trust that many of our readers will make amends, by personal inspection, for our unavoidable shortcomings.

Messrs. Blaise have an urethral dilator for stricture, something on the same principle as that of Mr. Holt, but differing from it in that the dilatation is only effected at one point of the urethra. A slender bar slides down between two elastic steel bands, and the head of this bar is made to dilate by the action of a screw at its extremity. The increase of size is therefore confined to the position of the head of the bar at the time when the screw is turned. They have also a stomach-pump adapted to act as an aspirator, and provided with an india-rubber escape-tube, interrupted by a short length of glass, through which the character of the passing fluid may be seen. They also show a very good pair of uterine scissors, and a pair of tonsil scissors, on the principle of those made for excising pieces of skin for grafting, which seize and draw forward the tonsil by their forceps, as the scissor blades are about to close upon it.

Messrs. Evans and Wormall show an admirable pair of speculum forceps, at once long, light, and slender, and so bent that the hand of the operator shall not obstruct his view, while at the same time they possess all necessary strength. They also have an improved stricture dilator, and a good pair of scissors for use within a speculum. They have a galvanic bullet detector, which rings a bell when the contact of its probes with a metallic substance completes the electrical circuit; and they show Surgeon-Major Fitzgerald's nests of metallic dressing basons, so curved as to adapt themselves closely to any part of the body. They have further a very compact and excellent field surgical dressing wallet, to be carried by hospital attendants.

Messrs. Krohne and Sesemann show Mr. Durham's forceps for extracting toe-nails; Mr. Bryant's rectal speculum; a uterine écraseur in which the wire runs over little pulleys, with much diminished risk of cutting, and another in which a second travelling bar to carry wire is provided; when the first bar has been drawn down as far as possible, if a growth is still not divided, the wire may be cut, fastened to the second bar, and the whole range of the original movement repeated. They show also some very good trachea tubes, both in silver and vulcanite, for which last material they claim special advantages, some new forceps for extracting foreign bodies from the ear, Dr. Bantock's uterine redressor, Dr. Aveling's instruments for fixing wire sutures, and the whole of Mr. Spencer Wells's instruments for ovariotomy. Among these is a clamp that is grasped externally by very strong forceps, instead of being closed by comparatively slight blades inserted into its branches; and for this great strength and durability are claimed.

Messrs. Mayer and Meltzer have cylindrical splints formed of light rods of wood, crossing in opposite directions, and pivoted at their intersection; they precisely resemble the covers for flower-pots that are often to be seen in cottage windows, and they combine great lightness with perfect rigidity, and complete support for a limb in all directions. They can be made in all sizes, and are said to be especially applicable to the fractures of restless children. The same makers also show an aspirator to which a sort of stirrup is attached, so that the syringe may be fixed by the foot of the operator while the piston and taps are being worked by the hands; they have a spinal support, in which an ingenious ball and socket joint takes off pressure from the abdomen, a very cleverly modified form of Scarpa's shoe, a pair of double-branched forceps for seizing the edges of fissures or fistulæ, and an excellent pair of forceps for foreign bodies in the ear.

Besides the objects enumerated, the cases of all the makers named contain a great variety of instruments of ordinary kinds, finished to the highest perfection.

We have omitted Mr. Hawksley from his alphabetical place in the foregoing brief summary, on account of the highly useful and completely original character of some of the objects which he displays. In the first rank, as a matter of interest to most practitioners, and especially to country practitioners, we should place his new patent vaginal speculum and his patent stethoscope. The speculum is on the same principle as Ferguson's; but is made of talc instead of glass. The cylinder of talc is silvered externally in the ordinary way, and the silvering is covered with papier maché or ebonite, and some form of durable black varnish. The result is an instrument that is exceedingly light, that has no tendency to break, and that gives a larger internal for the same external diameter. A speculum six inches long, two inches in clear internal diameter at the outer end, and one inch in clear internal diameter at the internal end, weighs just one ounce and a third; and this alone is sufficent to commend it to everyone who requires occasionally to carry such an instrument in his pocket. The patent stethoscope also combines the two characters of lightness and infrangibility. It is made of very thin gun-metal, which may be gilt if required, with a vulcanite ear-piece. It is an excellent conductor of sound, and weighs less than three quarters of an ounce. It is also sold with a clinical case, shorter than the stethoscope, and closing round its tube so as to leave the ends projecting. This case carries necessaries for urinary examination, clinical thermometer, vaccination, and lymph tubes. Mr. Hawksley states in his advertisement that the stethoscope is the result of more than 3000 experiments, with 135 different forms of instrument, and extending over a long period, in order to find the proportions and principles of construction that yielded the best results. He has also an ether inhaler of his own contrivance, which has been used very successfully at the Middlesex Hospital. Among other advantages, it has a tube to carry the expired ether vapour to the floor, instead of its being diffused in the immediate vicinity of the faces of the surgeon and assistants.

(*To be continued.*)

COMMERCIAL PEPSIN.

FEW remedial agents are more entirely dependent upon skilful and careful preparation than pepsin. It is generally admitted that, when good, it is a valuable medicine; but, unfortunately, either from the special difficulties which beset its manufacture, from some imperfection in the formulæ by which it is prepared, or from mere carelessness on the part of the manufacturers, many of the samples that we meet with in commerce are almost, and some are even absolutely, worthless.

This is not only a mortifying fact, but a grave misfortune. It is intensely annoying both to the physician and chemist when it is discovered that a substance which has long been prescribed by the one and dispensed by the other has no more value than an equal weight of starch; and it is a misfortune to the whole community when a valuable medicine is thrown into discredit by bungling if not fraudulent manufacture.

Fortunately, a very simple experiment enables us to judge whether a given sample of pepsin is up to the standard of quality. It may be conducted as follows:—Boil an egg for an hour, and cut a portion of the white into the thinnest possible slices. Take a two-ounce wide-mouthed bottle and introduce into it 77 grs. (5 grammes) of the sliced white of egg, 1½ gr. of pepsin, 4 minims of strong hydrochloric acid, and 420 minims of distilled water. Place the bottle in a water-bath, and keep it for four hours at a temperature of 100° F. A higher temperature (not exceeding 120° F.) causes more rapid digestion; but it is, perhaps, better to work at about the temperature of the stomach. At the end of the experiment all the albumen should have been dissolved, nothing remaining but minute quantities of fibrous or membranous matters.

The above proportions are those used by Prof. Tuson in some experiments to which we shall afterwards refer, and that the test is not unduly severe is proved by the fact that with one of the samples he examined, half the quantity of pepsin here prescribed (0·05 gramme, equal to 0·75 grain) was found sufficient to dissolve the albumen. With samples that contain much starch, double the above quantities of acid and water must be used. The residue may be thrown upon a muslin filter and examined. Unaltered albumen will be clearly visible, even if much starch, &c., are present. In many cases it is possible to form a rough measure of the comparative value of different samples by collecting the residual albumen (if there be any), placing it on filter-paper for a short time to drain, and weighing it.

Another and in some respects better mode of measuring the action of pepsin has recently been proposed by Gruenhagen (Pflüger's *Archiv*, v. 203). Recent and moist blood fibrin is soaked in 0·2 per cent. hydrochloric until a stiff jelly is formed. The jelly is then placed on a filter, and allowed to stand till no more drops fall. A few drops of a solution of the pepsin are then added. In about two minutes the fibrin begins to dissolve and drops of peptone to fall. The rapidity with which these drops fall, or, as afterwards suggested by von Wittich (*op cit.*, v. 435), the amount which falls in a given time, is taken as a measure of the activity of the pepsin. The experiment might be better made, as Gruenhagen suggests, if the bath were maintained at a given temperature—say 100° or 120° F.—by means of a hot-water funnel. There would, however, be some difficulty in keeping the temperature quite constant, and this condition is essential, as the rate of digestion increases steadily up to 120° F., or even a little higher.

The researches of Professor Tuson, to which we have already referred, were published in THE LANCET of August 13th, 1870. They had for their object the comparison of the real value of some of the chief kinds of pepsin then in the market, and they were evidently conducted with great care. Ten different samples, prepared by six different makers, were examined, and the results tabulated. The experiments, all of which were performed in duplicate, were divided into two series. In one, white of egg, in the other finely minced lean of rump-steak was employed. In every experiment 5 grammes (77 grains) of the albumen or fibrin was mixed with either 25 or 50 c.c. (424 or 848 minims) of one per cent. hydrochloric acid. Quantities of pepsin which varied from 0·05 to 5·0 grammes (0·72 to 72 grains) were added, and the whole digested at 100° F. for four hours. The results are given in tables which are well worth examination. The pepsin prepared by four out of the six makers was found to have no digestive power whatever. Of the remaining two kinds, one was almost exactly ten times as good as the other. Nearly 300 experiments were made in all, and the pre-eminent value of the one make of pepsin over all the others examined was incontestibly shown.

Another series of experiments on the comparative value of the pepsins of commerce has recently appeared in "The Practitioner" (June and August, 1872.)

These experiments were made by a process somewhat similar, but decidedly inferior, to that employed by Prof. Tuson, whose previous labours are not referred to in the articles. Small cubes of egg-albumen were introduced into a mixture of 100 c.c. of water, 0·4 c.c. of strong hydrochloric acid, and 1 gramme of the pepsin to be examined. The mixture was maintained for three hours and a half at a temperature of 90°—95° Fahr., and the quantity of albumen dissolved was then determined by some method not described. Examined in this way all the samples tested were pronounced to be nearly worthless, a slight advantage being, however, assigned to one of them. We confess we do not attach much importance to these experiments. The temperature was too low, and the time too short for satisfactory results. Moreover cubes are much less easily digested than thin slices, and we doubt very much whether the measurements of dissolved albumen are to be trusted.

A more important contribution to our knowledge of pepsin is to be found in the interesting experiments of Mr. Scheffer. We should be glad to hear of an independent verification of Mr. Scheffer's results, because they promise to yield us not only a good and simple mode of preparing pepsin, but also a satisfactory means of assay. His most important observation is that pepsin may be precipitated from its slightly acid solution by the addition of an equal volume of a saturated solution of common salt. He also finds that true pepsin and bismuth cannot exist in the same solution, and that the solutions sold under the joint names are therefore worthless, as far as pepsin is concerned.

Upon one point there would still appear to be some doubt. Mr. Scheffer asserts, and his experiments seem to prove, that the activity of pepsin is destroyed by alcohol, even when diluted with an equal bulk of water, and is materially diminished by smaller quantities of alcohol. This would of course put an end to the use of pepsin wine. But, on the other hand, von Wittich, in the paper already quoted, asserts that pepsin may be extracted from gastric mucous membrane (the pyloric portion being rejected) after it has been steeped in alcohol, and even from the precipitate produced in glycerin extract of fresh mucous membrane by the addition of alcohol.

Further experiments on the whole subject, however, are demanded.

OPHTHALMIA IN SCHOOLS.

To the Editor of THE LANCET.

SIR,—If it be true that crowding in dormitories is the chief source of contagious ophthalmia, will you kindly explain how it is that Forest-gate District School, with many dormitories affording less than 200 cubic feet per child, and the entire average much below 300, is perfectly free from contagious ophthalmia, whilst the North Surrey School, with 360 cubic feet per child, is full of that disease?

Ten years ago, when I became connected with Forest-gate school, there were little over 300 children, nearly all affected; now there are 340 in the same space, and no disease. How is this?

I am medical officer to the West Ham Union Workhouse, having about 300 children; cubic space of dormitories below 200 cubic feet each; and ophthalmia unknown. How is this?

I am, Sir, yours faithfully,

THOMAS J. VALLANCE, M.D., F.R.C.S. Exam.

Stratford, E., April 16th, 1873.

To the Editor of THE LANCET.

SIR,—In an editorial paragraph in this week's LANCET my name is mentioned in connexion with a letter to the editor of *The Times*, on the subject of ophthalmia in schools. I quite concur in the tenor of the letter in question, especially as to the desirability of more efficient medical inspection of such schools; but as some one else wrote the letter, I cannot claim any merit from the suggestion.

I am, Sir, your obedient servant,

W. SPENCER WATSON.

Henrietta-street, Cavendish-square, April 16th, 1873.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND. — The following gentlemen passed the primary examination in anatomy and physiology at recent meetings of the Court of Examiners:—

Robert Brummitt, J. Rees, and E. J. Adkins, Guy's; A. Boswell, W. G. Guppy, and H. B. Guppy, St. Bartholomew's; J. J. K. Fairclough, A. Chadwick, T. Anningson, J. D. Bradshaw, T. Gallimore, and J. B. Stelfox, Manchester; T. Walby, E. S. Wood, and J. Bark, Liverpool; J. Taylor, Bristol; H. Williams, Glasgow; S. J. Thomson and G. M. J. Giles, St. Mary's; W. F. Edgelow and W. H. Bull, St. George's; W. M. Vores and W. D. Hemming, King's College; R. B. Wilkins and L. J. Hobson, University College; E. W. Jolly, Charing-cross Hosp.; J. W. B. Mason and G. C. Karop, Middlesex Hospital; R. K. Archer and S. Wright, Westminster Hosp.; C. W. H. Cameron, St. Thomas's Hosp.; H. Caddy, O. Gwatkin, A. C. Barrs, W. H. Lamb, E. Duke, G. H. Blackmore, H. C. Burton, H. H. James, C. M. Johnston, and W. Cock, Guy's; W. H. Briggs, H. Gordon Cumming, F. H. Carter, W. Kebbell, T. L. Brown, J. K. Barton, and C. H. Day, St. Bartholomew's; W. J. Pickup, T. G. Lawrence, J. Gairdner, E. Symonds, F. R. Howse, and L. Cave, University Coll.; E. J. Day, P. H. Williams, and G. Bate, St. Thomas's; J. G. Hancock, J. B. Footner, and G. G. Sparrow, King's Coll.; F. D. B. Collenette and H. Habgood, London Hosp.; H. W. D. Walsh, A. W. Higgs, and H. M. Sampson, St. Mary's; H. D. Stewart, T. M. Sibbald, T. Evans, and F. G. Harvey, King's College; W. A. Hay, A. L. Bowen, C. H. Hayes, D. Elcum, E. Pritchard, J. T. W. S. Kellard, and H. Bartlett, Guy's; J. G. Langley, L. Jameson, L. M. Buckell, D. Edwards, and R. A. Jackson, University College; M. H. H. Vernon, J. Ranking, F. D. Hayman, G. H. Hames, and F. H. Sparrow, St. Bartholomew's; T. Burtonshaw, W. G. Jones, and W. L. Hughes, London Hosp.; G. S. Ranking, Cambridge; M. J. De Brent, Westminster Hospital; E. W. Henley and W. H. Cadge, St. George's; C. J. Woollett, Charing-cross Hosp.; H. G. Armstrong and H. P. Potter, St. Thomas's; C. Rees, W. E. Snook, A. de W. Baker, F. W. R. Romano, W. T. Pascoe, J. Utting, and E. G. Giblin, Guy's; H. C. Grimwood, King's Coll.; H. A. Wickers, Charing-cross Hosp.; E. Buckell, R. F. Woodcock, J. M. Randle, J. C. Clayton, R. Cobb, and P. M. Chapman, University Coll.; H. C. Sandford, A. O. H. Phillips, and J. K. Pickford, St. Thomas's; F. Treves and J. H. Tartle, London Hosp.; D. Hepburn, Middlesex Hosp.; J. L. Jaques, Westminster Hospital; R. V. Musgrave and H. Swonder, St. Mary's; C. T. Dent, Cambridge; E. Howard and W. A. Ellis, St. George's; F. Watts, St. Bartholomew's; F. Shann, Cambridge and St. George's; R. H. Fox and H. E. Price, London Hosp.; W. C. James, Guy's; O. H. Channer, Bristol; J. Spark, St. Bartholomew's; J. H. Davies, Edinburgh; Wm. H. Torbock, University Coll.; F. H. Low, King's Coll.

Of the 191 candidates examined, 26 failed to satisfy the Court, and were referred to their anatomical and physiological studies for a period of three months. The next primary examinations will be held on the 26th of April and 10th of May next respectively.

APOTHECARIES' HALL. — The following gentlemen passed their examination in the Science and Practice of Medicine, and received certificates to practise, on April 10th:—

Barnard, Charles Edward, Hobart Town, Tasmania.
Boddy, Evan Marlett, Camberwell-road.
Knowles, Edmund, Cambridge.
Gilmour, John Henry, Hurstbourne Tarrant.
Neal, John Breward, Bodmin, Cornwall.
White, George Bentley, Nottingham.

As Assistant in Compounding and Dispensing Medicines:—

Hodges, Edwin Goodall, Aberdare, South Wales.

The following gentlemen also on the same day passed their Primary Professional Examination:—

William Henry Lush, St. Thomas's Hospital; John Jepson Newman, Guy's Hospital; Trevor W. W. Williams, St. Bartholomew's Hospital.

MR. EDWIN WOODWARD, of King's Lynn, has received the Government grant for successful vaccination, £33 5s. (second time).

THE salary of Mr. Spinks, medical officer of the Warrington Workhouse, has been increased from £60 to £100 a year.

AT the quarterly meeting of the directors of the Naval Medical Compassionate Fund, held on the 8th inst., Sir Edward Hilditch, Inspector-General, in the chair, the sum of £60 was distributed among the various claimants.

ASSOCIATION OF MEDICAL OFFICERS OF HEALTH.—At the meeting of this Association, to be held this day (Saturday), Dr. Thomas Stevenson will offer some remarks on "Precautions to be observed in making Food Analyses, and in giving Certificates."

PRESENTATION.—Joseph Farrar, Esq., L.R.C.P. Ed., of Boroughbridge, Yorks, was on the 18th inst. presented by the Amalgamated Friendly Societies of the town and district, and other friends outside the lodges, with a flattering testimonial on parchment, accompanied with a purse of gold, "as a mark of recognition of the satisfactory manner in which he has discharged his duties to the societies and his patients."

THE PUBLIC HEALTH ACT, 1872.

[In the following list the letters "R.S.D." signify Rural Sanitary District, and "U.S.D." Urban Sanitary District.]

Districts, and Medical Officers.	*Salary per ann.*	*Area in Acres.*	*Population.*
Aldershot, U.S.D.—Dr. John Shoolbraid	£30	4000	7500
Aston, R.S.D.—Dr. James Hickinbotham	£150	27385	17544
Awre: Cirencester, Kingsholm St. Catherine, Newnham, Tetbury, Westbury-on-Severn, Chepstow, Chipping-Sodbury, Cirencester, Dursley, Gloucester, Tetbury, Thornbury, Westbury-on-Severn (U.S.D.s. + R.S.D.s. combined)—Dr. F. T. Bond	£800	400000	131700
Barnet: Berkhampstead, Hemel Hempstead, Hendon, Watford, Welwyn, Barnet, Tring (R.S.D.s. + U.S.D.s. combined)—Dr. C. E. Saunders	£750		
Barnet, U.S.D.—combined with Barnet R.S.D. and others.			
Barton-upon-Irwell, R.S.D.—Mr. T. H. Brocklehurst	£70	8000	4000
Basingstoke, U.S.D.—Mr. Chas. F. Webb	£60	4036	5374
Bedford, Beds, R.S.D.—viz.:			
Southern Division—Dr. Chas. E. Prior	£120	47860	14517
Northern Division—Mr. Robt. S. Stedman ...	£120	42174	10297
Berkhampstead, R.S.D.—combined with Barnet R.S.D. and others.			
Blean: Bridge, Dover, East Ashford, Eastry, Elham, Thanet, West Ashford, Dover, U.S.D. (R.S.D.s. combined)—Dr. M. K. Robinson	£800	300038	111405
Bootle-cum-Linacre, U.S.D.—Mr. R. J. Sprakeling	£25	1300	16184
Bournemouth, U.S.D. Christchurch, Ringwood R.S.D.s. (combined)—Dr. R. S. J. Stevens	£225	60125	21735
Bridge, R.S.D.—combined with Blean R.S.D. and others.			
Bromsgrove, County U.S.D.s. combined with Bromsgrove, Town—Dr. Charles Davenport	£60	11302	11761
Chard, R.S.D.—Dr. George Barnes	£350	52731	24034
Chatham, U.S.D.—Dr. James Bell Jardine	£40	—	25000
Cheadle, R.S.D.—Mr. Thomas Webb	£100	53000	26000
Chepstow, R.S.D.—combined with Awre U.S.D. and others.			
Chipping Sodbury, R.S.D.—combined with Awre U.S.D. and others.			
Chorley, R.S.D. } Dr. John M. Rigby ... { ...	£200	43923	18175
Chorley, U.S.D. } { ...	£20	3814	17400
Christchurch, R.S.D.—combined with Bournemouth U.S.D. and another.			
Cirencester, R.S.D. } combined with Awre U.S.D.			
Cirencester, U.S.D. } and others.			
Croydon, R.S.D.—viz.:			
District No. 6—Mr. Edward Marshall	£60	7890	9423
" 7—Mr. Wm. E. Creesy	£50	6240	3110
" 8—Dr. Ebenezer Diver	£30	10205	2466
Dover, R.S.D. } combined with Blean R.S.D. and Dover, U.S.D. } others.			
Dresden, U.S.D.—Mr. Harry May	£10	26	2805
Dursley, R.S.D.—combined with Awre U.S.D. and others.			
East Ashford, R.S.D.—combined with Blean R.S.D. and others.			
Eastry, R.S.D.—combined with Blean R.S.D. and others.			
Ecclesall-Bierlow, R.S.D.—Mr. George Booker ...	£30	10315	3974
Elham, R.S.D.—combined with Blean R.S.D. and others.			
Gloucester, R.S.D.—combined with Awre U.S.D. and others.			
Guildford, R.S.D.—viz.:			
Albury District.—Mr. C. H. Farnivall ...	£10 each per ann., & 10s. 6d. for every nuisance they may be called upon by the inspect. of nuisances to inspect.	8830	2824
Farncombe Dist.—Dr. G. F. H. La Fargue		5109	3534
Godalming Dist.—Mr. W. Parson		8166	2162
Guildford No. 2 Dist.—Mr. T. J. Scholfick		6720	2453
Horsley Dist.—Mr. J. K. Eager		7161	1531
Ripley Dist.—Mr. J. H. Satcliff		16320	3023
Woking Dist.—Mr. T. C. Eager		8190	4106
Worplesdon Dist.—Mr. T. J. Sells		12190	2539
Hartley-Wintney, R.S.D.—Mr. Charles J. Denny	£120	56889	20601
Heath Town, U.S.D.—Mr. John Green	£10	738	5268
Hemel Hempstead, R.S.D. — combined with Barnet R.S.D. and others.			
Hendon, R.S.D.—combined with Barnet R.S.D. and others.			
Hinderwell, U.S.D.—Mr. Robert Dowell	£15	1600	2599
Keighley, U.S.D.—Mr. John Milligan	£20	1800	21000

Districts, and Medical Officers.	*Salary per ann.*	*Area in Acres.*	*Population.*
Kingsholm St. Catherine, U.S.D.—combined with Awre U.S.D. and others.			
Knaresborough and Tentergate, U.S.D.—Mr. H. R. Wright	£60	481	5205
Knaresborough, R.S.D.—Mr. Wm. C. Cautley ...	£120	38511	7218
Louth, R.S.D. } Dr. Richard Domenichetti ... { Louth, U.S.D. }	£375 / £125	14473 / 2360	24260 / 10500
Machynlleth, R.S.D.—viz.:			
Darowen Dist.—Mr. Richard Griffiths ...			2418
Llanwrin Dist.—Mr. David R. Pughe	Not fixed	95000	1502
Machynlleth Dist.—Mr. Hugh Lloyd			2418
Llanbrynmair Dist.—Mr. Robert Edwards ...			1903
Malton, R.S.D. } Dr. William Young ... ... Malton, U.S.D. }	£300	110010	22882
Mere, R.S.D.—Mr. Wilton Provis	£45	33244	8105
Newnham, U.S.D.—combined with Awre U.S.D. and others.			
Newport, Mon., R.S.D.—viz.:			
Bedwas District.—Mr. W. J. Davies		10154	2305
Caerleon Dist.—Mr. John A. Morris		14972	5346
Magor Dist.—Dr. William W. Morgan ...		14985	2209
Marshfield Dist.—Mr. W. J. Brizzel	Not	14479	1880
Mynyddyswyn Dist.—Mr. Wm. J. Davies ...	fixed.	16210	6877
Newport Dist.—Mr. Thomas Limbery		9050	11033
Risca Dist.—Mr. Richard Istance		8840	6062
St. Woollos Dist.—Mr. Octavius H. Jennings		3584	15696
Penzance, U.S.D.—Mr. Francis Bonse	Gratis till Midsum.	472	10312
Prestwich, R.S.D.—Mr. Samuel Buckley	£120	4983	8479
Reading, U.S.D.—Dr. John Shea	£300		
Ringwood, R.S.D.—combined with Bournemouth U.S.D. and another.			
Ripon, R.S.D.—Mr. Thomas Collier	£150	68747	9222
Rosholme, U.S.D.—Mr. John Gregory	£52 10s.	1160	7300
Scarborough, R.S.D.—Mr. Archibald Megget ...	£60	84385	10034
Scarborough, U.S.D.—Dr. John W. Taylor... ...	£30	2293	24259
Sedgley, Lower, U.S.D.—Dr. Joseph Eagleton ...	Not fixed	3800	22900
Sedgley, Upper, U.S.D.—Dr. J. M'Nab Ballendin	Not fixed	3600	14455
Stockton-on-Tees, U.S.D.—Mr. A. E. H. Trotter	£25	...	30000
Stretford, U.S.D.—Mr. George W. Pettingor ...	£50	3264	11945
Swinton and Pendlebury, U.S.D.—Mr. C. J. Farr	£50		
Tamworth, R.S.D. } Mr. W. Riddell Brunton ... { Tamworth, U.S.D. }	£120 / £30	40000 / 7968	12000 / 10000
Tendring, R.S.D.—Dr. Henry Gramshaw	£200	81122	20034
Tetbury, R.S.D. } combined with Awre U.S.D. Tetbury, U.S.D. } and others.			
Thanet, R.S.D. — combined with Bleau R.S.D. and others.			
Thornbury, R.S.D.—combined with Awre U.S.D. and others.			
Toxteth Park, U.S.D.—Mr. Alfred E. Carter ...	£25	1500	5300
Tring, U.S.D. — combined with Barnet R.S.D. and others.			
Tunstall, U.S.D.—Mr. Joshua P. Edwards	£20	800	13340
Wakefield, U.S.D.—Dr. W. Swift Wade	£30	1553	28079
Watford, R.S.D.—combined with Barnet R.S.D. and others.			
Watford, U.S.D.—Dr. Alfred T. Brett	£20	800	7491
Wednesfield, U.S.D.—Mr. Arthur Hands	£10	2800	3780
Welwyn, R.S.D.—combined with Barnet R.S.D. and others.			
West Ashford, R.S.D. — combined with Bleau R.S.D. and others.			
Westbury-on-Severn, R.S.D. } combined with Awre Westbury-on-Severn, U.S.D. } U.S.D. and others.			
Wetherby, R.S.D.—Mr. John S. Wesley	£120	6940	14674
Weymouth, U.S.D.—Dr. Henry Tizard...	£40		
Whitby, R.S.D.—viz.:			
Fylingdales &c. District.—Mr. J. Taylerson...	£35	29506	18322
Egton Dist.—Mr. Charles Quinton	£35	37129	4966
Lyth Dist.—Mr. John V. Laverick	£30	17310	4750
Whitehaven, R.S.D.—Mr. James Syme	£150	79709	24935
Witham, R.S.D.—Dr. William G. Gibson	£150	36314	12519
Worksop, U.S.D.—Mr. Henry N. Hett...	£5	18220	10000
Yeovil, R.S.D.—Dr. Joseph D. Adams...	£150	48700	20377

Medical Appointments.

ALDERSEY, W. H., F.R.C.S.E., has been appointed Medical Officer of Health for the Havant Rural Sanitary District: £52 10s. per annum.

ALLEN, A. H., F.C.S., Lecturer on Chemistry at the Sheffield School of Medicine, has been appointed Public Analyst for the Borough of Sheffield: £100 per annum.

ALLEN, J., M.R.C.S.E., has been appointed a Medical Officer of Health for the Belper Rural Sanitary District: £150 per annum.

BECK, J. T., M.R.C.S.E., has been reappointed Medical Officer and Public Vaccinator for District No. 6 of the Chesterton Union, Cambridgeshire.

CAMPBELL, W. M., M.B., C.M., has been appointed Medical Officer to the Dingle Epileptic Hospital, Liverpool, vice C. Elliott, M.B., L.R.C.S.I., resigned.

ELLIS, H. W. T., L.R.C.P.Ed., has been appointed Medical Officer of Health for the Urban Sanitary District of Crowle and Eastoft, Lincolnshire.

FARR, C. J., M.R.C.S.E., has been appointed Medical Officer of Health for the Swindon and Pendlebury Urban Sanitary District: £50 per annum.

FLETCHER, T. B. E., M.D., has been appointed Visitor of Houses in Warwickshire licensed for the reception of Lunatics, vice Thomson, deceased.

FOOTE, G., M.R.C.S.E., has been appointed Medical Officer of Health for the Kington Rural Sanitary District: £60 per annum.

FORDER, T., M.R.C.S.E., has been appointed Medical Officer for the A Division of the Winchester District of the New Winchester Union.

GARDNER, R. H., M.B., C.M., has been appointed Resident Medical Officer to Queen Charlotte's Lying-in Hospital, vice Bushby, resigned.

GRIFFITHS, F. T., M.D., has been appointed Medical Officer of Health for the Sheffield Urban Sanitary District: £600 per annum.

GUTTERIDGE, E. P., M.R.C.S.E., has been appointed Medical Officer of Health for the Maldon, Essex, Urban Sanitary District.

HAVILAND, Mr. A., Lecturer on the Geography of Disease at St. Thomas's Hospital, has been appointed Medical Officer of Health for the County of Northampton: £300 per annum.

HILL, A., M.D., has been appointed Public Analyst for Warwickshire.

KNOWLES, E., M.R.C.S.E., has been reappointed Medical Officer and Public Vaccinator for District No. 5 of the Chesterton Union, Cambridgeshire.

KNOX, J., M.D., has been appointed Medical Officer of Health for the South Division of the Bakewell Rural and Urban Sanitary Districts, combined.

LLOYD, W., M.B., has been appointed a Physician to the Carmarthenshire Infirmary.

MACKINTOSH, A., M.D., L.F.P. & S. Glas., has been appointed Medical Officer of Health for the Chesterfield Rural, and Dronfield Urban, Sanitary Districts, combined: £350 per annum.

MAHOMED, F. H. H. A., M.R.C.S.E., has been appointed Resident Medical Officer to the London Fever Hospital, vice Turner, resigned.

MAY, H., L.R.C.P.L., M.R.C.S.E., has been appointed Medical Officer of Health for the Aston Manor Urban Sanitary District: £100 per annum.

MEADOWS, C. F. W., M.R.C.S.E., has been appointed Medical Officer for District No. 4 of the Woodbridge Union, Suffolk.

MURIE, Dr. J., F.L.S., late Prosector to the Zoological Society, has been elected Professor of Anatomy in the Veterinary College, Edinburgh, vice Professor Davidson, M.D., deceased.

MUSCROFT, H., M.D., L.R.C.P.L., has been appointed Medical Officer of Health for the Pontefract Urban Sanitary District: £40 per annum.

PARSONS, J., M.R.C.S.E., has been appointed Medical Officer of Health for the Frome Rural and Urban Sanitary Districts, combined: £200 per annum.

PEACOCK, J. B., L.R.C.P.Ed., M.R.C.S.E., has been appointed Medical Officer of Health for the Northallerton Rural Sanitary District: £80 per annum.

ROBERTSON, A. S., M.D., has been appointed Medical Officer of Health for the Horwich Urban Sanitary District: £30 per annum.

ROWLANDS, J., F.R.C.S.E., has been appointed a Consulting Surgeon to the Carmarthenshire Infirmary, on resigning as Surgeon.

ROWLANDS, J. D., M.R.C.S.E., has been appointed a Surgeon to the Carmarthenshire Infirmary.

SOBEY, A. L., M.R.C.S.E., has been appointed House-Surgeon to the West London Hospital, vice Ward, resigned.

STAFFORD, J. F., L.R.C.P.Ed., L.R.C.S.Ed., has been appointed Medical Officer and Public Vaccinator for District No. 3 of the Chesterton Union, Cambridgeshire, vice Ryley, resigned.

STEPHENS, T., M.R.C.S.E., has been appointed Medical Officer of Health for the North Shields District of the Tynemouth Union.

STEVENSON, Dr., Professor of Chemistry at Guy's Hospital, has been appointed Public Analyst for the Shoreditch District.

STOWERS, J. H., M.R.C.S.E., has been appointed Resident Ophthalmic House-Surgeon to St. Bartholomew's Hospital, vice E. Jepson, M.R.C.S.E.

SUTTON, Dr., has been appointed Public Analyst for the Shoreditch District.

THOMAS, T. G., M.R.C.S.E., has been appointed House-Surgeon to the Male Lock Hospital, vice J. Appleyard, M.R.C.S.E., whose term had expired.

TIMMINS, Dr. J. A. J., has been appointed a Physician to the Carmarthenshire Infirmary.

TRUMAN, Dr. E. B., Analyst to the Borough of Nottingham, has also been appointed Public Analyst to the County of Nottingham.

TURNER, G., L.R.C.P.L., M.R.C.S.E., has been appointed Medical Officer of Health for the Portsmouth Urban Sanitary District: £450 per annum.

WADE, W. J., M.R.C.S.E., has been appointed Medical Officer for the Morecambe District of the Lancaster Union, vice Harker, resigned.

WEBBER, W. L., M.R.C.S.E., has been appointed House-Surgeon to the West London Hospital, vice Sobey, promoted.

Births, Marriages, and Deaths.

BIRTHS.

KERR.—On the 9th inst., at Dumfries, the wife of Dr. Wm. S. Kerr, of a daughter.

KETTLE.—On the 12th inst., at Verulam-place, Small-heath, Birmingham, the wife of Henry Kettle, M.R.C.S.E., of a daughter.

MASON.—On the 15th inst., at Eskdale House, Sudbury, Suffolk, the wife of W. Inglis Mason, M.R.C.S.E., of a son.

UTTING.—On the 11th inst., at Luton, the wife of James Utting, M.R.C.S.E., of a daughter.

MARRIAGES.

MUIR—SMITH.—On the 11th inst., at London Cottage, Wm. Limont Muir, L.R.C.P.Ed., of Stewarton, to Christina, daughter of the late Rev. Robt. Smith, of Stewarton.

WALKER—STODDART.—On the 15th inst., at St. George's, Tufnel-park, Wm. Newman Walker, M.R.C.S.E., to Jemima Jane, daughter of the late James Stoddart, Esq.

DEATHS.

CHARLES.—On the 11th inst., Thos. Charles, F.R.C.S.E., of Aberystwith.

CROFT.—On the 7th inst., Charles Percy Croft, M.D., of Newark-on-Trent, aged 57.

EDWARDS.—On the 27th ult., at the Royal Infirmary, Preston, Wm. John Edwards, M.B., C.M., Junior House-Surgeon, aged 23.

MATHIE.—On the 1st inst., at Gartan Glebe, Letterkenny, Ireland, Wm. Hay Maguire, L.K.Q.C.P.I., Medical Officer, Church-hill Dispensary, aged 29.

MORGAN.—On the 6th inst., at Caerphilly, Glamorganshire, John Rees Morgan, L.R.C.P.L., M.R.C.S.E. aged 27.

NICOL.—On the 13th inst., at Plympton, Devon, Patrick Nicol, M.D., late Senior Physician to the Bradford Infirmary and to the Fever Hospital, aged 25.

ROE.—On the 13th inst., Geo. Hamilton Roe, M.D., of Great Cumberland-place, Hyde-park, aged 77.

Medical Diary of the Week.

Monday, April 21.

ROYAL LONDON OPHTHALMIC HOSPITAL, MOORFIELDS.—Operations, 10½ A.M.
ROYAL WESTMINSTER OPHTHALMIC HOSPITAL.—Operations, 1½ P.M.
ST. MARK'S HOSPITAL.—Operations, 2 P.M.
METROPOLITAN FREE HOSPITAL.—Operations, 2 P.M.
MEDICAL SOCIETY OF LONDON. — 8 P.M. Dr. Boyd: "Observations on Still-born Children." — Dr. Symes Thompson: "Cases of Perityphlitis." — Mr. C. F. Maunder, "On two Cases of Dislocation and Fracture of the Humerus."

Tuesday, April 22.

ROYAL LONDON OPHTHALMIC HOSPITAL, MOORFIELDS.—Operations, 10½ A.M.
ROYAL WESTMINSTER OPHTHALMIC HOSPITAL.—Operations, 1½ P.M.
GUY'S HOSPITAL.—Operations, 1½ P.M.
WESTMINSTER HOSPITAL.—Operations, 2 P.M.
NATIONAL ORTHOPÆDIC HOSPITAL.—Operations, 2 P.M.
WEST LONDON HOSPITAL.—Operations, 3 P.M.
ROYAL INSTITUTION.—3 P.M. Mr. Dannreuther, "On Music of the Drama."
ROYAL MEDICAL AND CHIRURGICAL SOCIETY. — 8½ P.M. Dr. Elam, "On some results of Treatment in Affections of the Nervous System."—Dr. H. Sutherland, "On the Histology of the Blood of the Insane."—Dr. Boyd, "On Preternatural Cavities in the Brain of the Sane and the Insane."

Wednesday, April 23.

ROYAL LONDON OPHTHALMIC HOSPITAL, MOORFIELDS.—Operations, 10½ A.M.
MIDDLESEX HOSPITAL.—Operations, 1 P.M.
ST. GEORGE'S HOSPITAL.—Ophthalmic Operations, 1½ P.M.
ST. MARK'S HOSPITAL.—Operations, 1½ P.M.
ROYAL WESTMINSTER OPHTHALMIC HOSPITAL.—Operations, 1½ P.M.
ST. BARTHOLOMEW'S HOSPITAL.—Operations, 1½ P.M.
ST. THOMAS'S HOSPITAL.—Operations, 1½ P.M.
KING'S COLLEGE HOSPITAL.—Operations, 2 P.M.
GREAT NORTHERN HOSPITAL.—Operations, 2 P.M.
UNIVERSITY COLLEGE HOSPITAL.—Operations, 2 P.M.
LONDON HOSPITAL.—Operations, 2 P.M.
SAMARITAN FREE HOSPITAL FOR WOMEN AND CHILDREN.—Operations, 2½ P.M.
CANCER HOSPITAL.—Operations, 3 P.M.

Thursday, April 24.

ROYAL LONDON OPHTHALMIC HOSPITAL, MOORFIELDS.—Operations, 10½ A.M.
ST. GEORGE'S HOSPITAL.—Operations, 1 P.M.
ROYAL WESTMINSTER OPHTHALMIC HOSPITAL.—Operations, 1½ P.M.
UNIVERSITY COLLEGE HOSPITAL.—Operations, 2 P.M.
ROYAL ORTHOPÆDIC HOSPITAL.—Operations, 2 P.M.
CENTRAL LONDON OPHTHALMIC HOSPITAL.—Operations, 2 P.M.
ROYAL INSTITUTION.—3 P.M. Professor Tyndall, "On Light."

Friday, April 25.

ROYAL LONDON OPHTHALMIC HOSPITAL, MOORFIELDS.—Operations, 10½ A.M.
ROYAL WESTMINSTER OPHTHALMIC HOSPITAL.—Operations, 1½ P.M.
GUY'S HOSPITAL.—Operations, 1½ P.M.
ROYAL SOUTH LONDON OPHTHALMIC HOSPITAL.—Operations, 2 P.M.
CENTRAL LONDON OPHTHALMIC HOSPITAL.—Operations, 2 P.M.
QUEKETT MICROSCOPICAL CLUB.—8 P.M.
CLINICAL SOCIETY OF LONDON.—8½ P.M. Mr. Kesteven, "On a Case of Cancer of the Breast treated by Caustics and Incisions."—Dr. Greenhow, "On a Case of Acute Muscular Atrophy."—Dr. Tilbury Fox (for Dr. Fritsche), "On two unusual Cases of Elephantiasis Arabum." — Dr. Thorowgood, "On two Cases of Chronic Dysentery successfully treated by Ipecacuanha."
ROYAL INSTITUTION. — 9 P.M. Professor Flower, "On Palæontological Evidence of Modification of Animal Forms."

Saturday, April 26.

HOSPITAL FOR WOMEN, Soho-square.—Operations, 9½ A.M.
ROYAL LONDON OPHTHALMIC HOSPITAL, MOORFIELDS.—Operations, 10½ A.M.
ROYAL WESTMINSTER OPHTHALMIC HOSPITAL.—Operations, 1½ P.M.
ST. BARTHOLOMEW'S HOSPITAL.—Operations, 1½ P.M.
KING'S COLLEGE HOSPITAL.—Operations, 1½ P.M.
ROYAL FREE HOSPITAL.—Operations, 9 A.M. and 2 P.M.
CHARING-CROSS HOSPITAL.—Operations, 2 P.M.
ROYAL INSTITUTION.—3 P.M. Professor Odling, "On Ozone."

Notes, Short Comments, and Answers to Correspondents.

OWING to the great length of our Report of the important Discussion on Tubercle, we are reluctantly compelled to defer the insertion of much editorial and other matter until next week.

A Puzzled Student is dissatisfied with the payment he had to make to the General Medical Council, inasmuch as he sees no result or advantage from it. He especially complains that no assistance is given towards the repression of coarse and misleading quackery. "All I know," he says, "of the Medical Council is that at certain periods there appear in the medical papers long reports of their quarrelsome and never-ending speechifying, and I am further mortified to know that I and others are taxed for no apparent object except to ensure its continuance."

Mr. Thomas T. Hopgood (Sunderland) had better apply to the Secretary of the Dry-earth Closet Company, Bedford-street, Strand.

THE request of *Mr. J. Waring Curran* shall have our attention.

THE INDIAN AND COLONIAL MERCANTILE DIRECTORY.

IF we may judge from the number of questions that are from time to time addressed to us regarding various points about which this Directory furnishes information, we are rendering our readers a service by calling their attention to it. The new issue of Street's Indian and Colonial Mercantile Directory has many useful features. It lays down the various steam routes to different places, with rates of fares and times of transit, concisely indicating the different facilities offered by the several Companies, so as to enable persons to make a selection of the most advantageous course for their purpose. The London agents to each of the various banks are named. Full particulars as to the principal products of the articles in which the trade of each place chiefly consists are afforded. In the present volume information has been added regarding the principal Government offices in each town, and of the several railways in operation or construction, the populations, extent of countries, and official information of various kinds. A good deal of time and labour must have been bestowed both locally and at home in the production of a work of this kind, which, while it is specially useful to the commercial section of the community, supplies a large number of details about which intending emigrants of the medical profession, invalid travellers, and others so often seek information, and seek it in vain.

THE suggestion of *Mr. F. Ilderton* shall have our attention.

CASE OF PUERPERAL CONVULSIONS.

To the Editor of THE LANCET.

SIR,—The following account may perhaps be interesting to your readers, as being the record of a severe case of puerperal convulsions, ending favourably to the mother, yet not treated by any active or perturbative means, and not much affected, as I think, by treatment of another kind.

Mrs. F——, aged twenty-one, of moderately full habit, daily expecting confinement with her first child, was seized with epileptic convulsions about 6.30 P.M. on Thursday, the 2nd of January. She had complained for many days past of headache, in front especially, and had said on the day of her attack that she "felt as if she should go out of her mind." She had suffered also for some weeks from "numbness" of the right arm and hand. I may add that the catamenial discharge had always been irregular and scanty. On this day, too, there was an external source of anxiety and excitement connected with a concert in which her family were engaged. I found her lying on her face, partly under the dressing-table, in a violent convulsive fit. After removal to her bed, others followed in rapid succession. The pupils were for the most part widely dilated, and the eyes staring; face purple during the paroxysms; the tongue, which was constantly protruded, had been bitten severely; and a fluid tinged with blood escaped from the mouth. Generally after each fit loud stertorous breathing accompanied the comatose state. At one time, after a series of fits ending in apparent exhaustion, I noticed the pulse above 130, small, feeble, and intermitting. For eighteen hours the convulsive seizures continued, at varying intervals, and with frightful severity, consciousness not returning once during this period. Five grains of calomel were put on the back of the tongue, and repeated after an hour or two; subsequently a stimulating enema was given, neither remedy producing any perceptible effect; a mustard cataplasm was applied to the calves. About 10 P.M., when there was a brief lull, an experienced medical friend of mine saw the case with me, and did not suggest more active treatment. I next examined the state of the uterus, and found the head presenting, rather low down, the os admitting the tip of the finger; not rigid. A fit more violent than usual followed this operation. The urine was drawn off. The hair having been cut short, cloths dipped in cold vinegar, spirit, and water were assiduously applied to the head. This seemed after some time to produce a calm, and she had some apparently natural and refreshing slumber. I left her, hoping (against hope) that we had seen the last of the attacks. This was about 6 A.M. of January 3rd. My respite was, however, but short, and I was soon summoned, the report being this time that she was dying. After my return I was led to suppose from some movements that labour was progressing favourably, and it was so. The os was expanding, and I believed the membranes had burst. The convulsions still went on until finally at 1 P.M. they ceased, manifest labour pains, vigorous and regular, taking their place, but without returning consciousness. At 4 P.M. a dead female child was born, and the placenta soon followed. We were just able to get a few teaspoonfuls of brandy-and-water swallowed. This appeared needful at the moment; but I was soon convinced that there was no immediate reason to fear death from exhaustion. The pulse, from about 128 shortly before delivery, sank afterwards to 116, and she fell into a quiet, heavy sleep.

Consciousness partially returned in the course of the following day (Jan. 4th), and she took nourishment; the bladder was relieved; the lochia were free; pulse at 10 P.M. 90. Speech did not return until the 6th.

Not to go into tedious detail, I may say that after this I had no further anxiety about my patient in her steady though very gradual progress towards recovery. Placed under external conditions not altogether favourable to this end, I cannot say she has yet regained her former vigour. Her memory is somewhat defective, and she wants mental alacrity and tone; cannot bear being flurried, &c. She has nearly lost the numbness complained of before her confinement; has twice menstruated, and has made a journey to the south of England, where, according to her own account, she felt almost in her usual health.

Yours faithfully,
Acton, April 2nd, 1873. THOMAS FRANCIS.

ADVERTISING BY MEDICAL MEN.

MR. GEORGE DANIEL HARDING finds it consistent with his sense of dignity to thank the President and Committee of the "Sheepbridge Company Sick Club" in the advertising columns of the *Derbyshire Courier* for a kind present of £25, and the promise to increase his salary £25 per annum. He appends ten titles to his name at the end of his letter, and says it is well known that he was "one of the president surgeons to the Nottingham Hospital thirteen years ago"—whatever that may mean.

L.K.Q.C.P.I.—We think the Office ought to pay, and to be regarded as paying. The matter is not one into which the question of professional relations should be imported.

Nitrates.—The question was fully discussed in the following numbers of THE LANCET for 1872: March 16th, 23rd, June 15th, July 13th and 27th. The waters of deep chalk wells are generally good, even when they contain nitrates. Dr. Frankland takes the water of the Kent Company as a standard of purity for the metropolis in regard to organic matter, and yet it is strongly charged with nitrates. It is probably true that nitrates are always derived from animal oxidation; but the water of very deep wells has commonly been exposed to such thorough oxidation and filtration that scarcely any recent organic matter remains. It will be seen that we hold our correspondent's judgment in regard to the water of his district to be perfectly sound. The Company's water has probably no other fault than that of hardness; whereas the water of the shallow wells is evidently dangerous. Shallow wells in populous districts are almost always exposed to direct pollution; and when the water drawn from one of them is found to contain both nitrates and ammonia, it should at once be rejected as possible poison. For further confirmation, however, it would be wise to determine the quantity of chlorine which the water contains.

Morbus Cordis et Insanitas.—Our correspondent will find some observations on the subject to which he refers in Struthers' paper in the *Edinburgh Medical Journal*, June, 1863. Otherwise we know of no authorities better than those cited in Quain and Sharpey's Anatomy.

THE communication of *Mr. Thomas P. Raven* (Broadstairs) shall have our early attention.

Mr. F. C. Bailey (Norwich) had better make application to the Superintendent of the Royal Edinburgh Lunatic Asylum.

ARMY MEDICAL SERVICE.

To the Editor of THE LANCET.

SIR,—I am stating a simple fact when I say that the new Warrant is regarded with the utmost dissatisfaction by army medical officers of all grades. I believed from the tenor of Mr. Cardwell's speech, and from what I had heard for years during the time that this Warrant was hatching, that the medical officers were to be benefited by it. The unification of the department is in itself a sufficiently unpopular measure, and Mr. Cardwell has spared nothing that could add to its unpopularity. Can anything be more monstrously unjust than the action taken by the authorities as embodied in last month's Army List?

Common sense as well as common fairness ought to have dictated that the vested interests of officers and incumbents of regimental appointments should have been respected. When purchase was abolished, the officers affected were treated with every consideration; but none has been shown to the regimental medical officers, who find themselves suddenly disestablished in a way that is contrary to all precedent and to every principle of justice. And what benefit has the Warrant conferred on medical officers? Absolutely none. It is clear to me that officers of fifteen years' standing will lose in daily pay by it. There is no mention of promotion in the Warrant; on the contrary, it is specially provided that officers of the administrative rank may serve beyond sixty-five years of age. If we are to be placed on a general staff, why make the selection by medical officers of their quarters and cabins on shipboard depend upon their regimental service when attached to a regiment, and subject them every five years to the risk of undergoing a depression? Then, again, the loss of forage. This is a breach of faith. I care nothing for other departments. The Warrant of 1858 gave it as a privilege of rank, and the authorities have no right to take it away. It is simply ridiculous, under the circumstances, for an officer to wear spurs as part of his uniform. The Duke of Cambridge is henceforth the Director-General of the Medical Service, and for the life of me I cannot see the good of having a medical head at all. I have my own opinion of a system of legislation which is everything by turn and nothing long. Some of the so-called concessions are valueless. To give a man the rank of surgeon-major in India after twelve years, when he does not even draw the daily pay of the rank beneath him, and call it a concession, is a little too much. Look, again, at the fact that medical officers are in future to be saddled with all the duties of storekeepers without any additional pay. Is the State to save all this money, and to give its medical officers no commensurate advantages, but to make it an occasion of dispossessing them of some of their rights? I could go on expressing my just indignation at the evils of the Warrant for another column; but I will now conclude this letter, and beg to remain, Sir,

Yours obediently,

April, 1873. AN ARMY SURGEON.

CONVICTION UNDER THE MEDICAL ACT IN SCOTLAND.

ONE William Young has been fined a guinea for falsely appending M.D. to his name at the end of the following certificate of death, which has interest both from a medical and literary point of view. The prosecution was at the instance of the Procurator-Fiscal—a kind of functionary very much needed in England.

SCHEDULE G.

To the Registrar of the Parish of Guthrie, in the County of Forfar.

I hereby certify that I attended Mr. William Sturrock, who died on the 14th day of February 1873, at Bents of Turin; that I last saw the deceased on the 3d day of February 1873; and that the cause of death and duration of disease were as undernoted:—

Primary disease (a), dropecy of the kidenies.
Secondary disease (if any) (b), bronkatis of the lungs. } 15 days.
and (c), dropecy of the chest, &c. }

Witness my hand, this 6th day of February 1873.

N. B. may refer to the Sanitary Act, 1866, for the law as to the case stated, or to Glen's "Laws relating to Public Health." The local authority cannot compel removal of cases of infectious disease except where the sick person is living in a room occupied by members of more than one family, or one family has no proper lodging or accommodation, or is on shipboard. The local authority has power to pay all expenses incurred for removing cases within the law.

THE letter of *Dr. Curtwright Reed* shall be kept in mind.

Holborn Hill.—It is doubtful whether all magistrates would regard the use of such words as amounting to a violation of the Medical Act. But it would be worth trying the case before magistrates, and bringing under their notice the judgment of Baron Martin against Andrews for practising with an American degree.

H. F., (St. Leonard's-on-Sea.)—The *Revue des Deux Mondes* for the 1st inst. contains an admirable *résumé* of the various theories of life by Dr. Ferdinand Papillon.

Mr. Henry Clark is thanked for his letter.

PLUGGING THE POSTERIOR NARES.

To the Editor of THE LANCET.

SIR,—Whilst thanking you for inserting the description of my nasal plug in your journal, I trust that I may be allowed to trespass again on your space to endeavour to answer the two objections you make to it, and show that it is not only "ingenious," but, I trust, also useful.

Your first objection I can scarcely understand, and fear that there must have been some fault in the construction of the instrument I sent you to cause the difficulty of distending the bag you speak of. I have distended the bag on many occasions, and have never found the least difficulty, whether introduced into my own nose or not. I have always used the ordinary ear-syringe, and the most moderate but gradual pressure on the piston has sufficed to distend the bag to the required extent. I must beg, therefore, in all humility, to disregard this objection altogether, as arising either from some fault in the particular instrument I sent you, or in the syringe you used.

Your second objection is, of course, deserving of more serious consideration, and is the point in the instrument that I have been most anxious practically to test; but, alas, have had no opportunity of doing so. Although, of course, a globe is formed by the distension of the bag, you must remember that it is a highly elastic one, and capable of assuming almost any shape when subjected to pressure. You will see this point very forcibly illustrated if you will kindly take the trouble to pass the instrument through the nasal fossa of the skull in the dried state, and then distend the bag whilst lying in the posterior nares. I think you will be astonished how it adapts itself to every part of that irregular opening; how much more easily it would do so, I leave you to judge, when the bones were covered, and the aperture contracted by a lining of mucous membrane. Surely it would form a more efficient plug than the piece of lint tied in the middle by a piece of string, which we are in the habit of using. You talk about its not making proper pressure on the pharynx; no more does the lint plug; nor is it, I think, needed. The only point is to close both the anterior and posterior nares so as to prevent all escape of blood from an undilatable cavity, and thus lead to its coagulation.

Of course there are many little details in using the instrument which contribute to the comfort of both operator and patient. I think, for instance, that a slight curve downwards should be given to the extremity, and the bag oiled. It should also be pushed along very slowly, as I find that discomfort is only caused when a foreign body is moved roughly within the nasal fossa; so long as it is quiet, or moved very gently, no such discomfort is experienced. For this reason I find it very desirable, when distending the bag, to pinch with the finger and thumb the alæ nasi close against the stem of the instrument. This most effectually prevents all jarring movements whilst using the syringe, which might otherwise cause sneezing and other unpleasant consequences. As a further security, it might perhaps be desirable to dip the bag after being oiled into tannic acid. At all events the instrument is so inexpensive that I trust the members of the profession will give it a fair trial, and, if necessary or possible, suggest any alterations that may render it an efficient instrument in the treatment of epistaxis. I remain, Sir, your obedient servant,

Fulham-road, April 12th, 1873. A. GODRICH, M.A., M.R.C.S.

A. B.—Mechanics and Natural Philosophy: Balfour Stewart's Lessons in Elementary Physics; Wormell's Mechanics and Wormell's Natural Philosophy. Chemistry: Roscoe's Lessons. Botany: Henfrey's Elements, or Balfour's Botany. Zoology: Alleyne Nicholson's Text-Book.

M.D.—We think that such a one is quite entitled to dispense and charge for medicines for his own patients.

THE PICKERING MURDER.

To the Editor of THE LANCET.

SIR,—I notice an article in your number for April 5th with the above heading. It contains three or four questions which, having been present at the post-mortem, I may be able to answer.

I would first remark that the body was not in a state of ordinary decomposition. The muscular tissue, the tendons, and the ligaments had been converted into a putty-like substance of the nature of adipocere. The prisoner also stated that he partly disinterred the body, and then forcibly dragged it from its shallow grave, and this force, taken in connexion with the condition of the soft parts, is sufficient to account for the dislocations. Separation took place, not from "decomposition pure and simple," but from force acting upon a body whose tendinous and ligamentous structures had become converted into adipocere. The dislocations occurred at the ankle- and wrist-joints. I did not carefully examine the hand in which the hair was found, and therefore cannot speak precisely about it; but the hand itself was in the peculiar transformed state that was found in the rest of the body.

I shall be glad to give you any further information in my power.

Yours obediently,

Pickering, April 9th, 1873. W. S. SCHOLEFIELD.

*** We are obliged to Dr. Scholefield for his explanation. The case in point is, we should think, almost a solitary instance of a body (buried at the foot of a stick-stack, and presumably therefore in a dry situation) having become so completely adipocerous in four months that the ligaments and strong tendons of the wrist and ankle were unable to support the weight of the trunk. The excessive amount of rain during the past summer and autumn is probably answerable for the rapidity of the change.—ED. L.

UNQUALIFIED PRACTICE AT BERMONDSEY, ETC.

WE are informed that medical men leave in charge of branch practices unqualified assistants, and put in prominent style on the window the words "resident medical officer." The same words are said to be used by the great unqualified in filling up death and vaccination certificates. The filling up of death certificates by unqualified persons in the way mentioned is, doubtless, a breach of the Vaccination Act. It is more doubtful whether the use of the words "resident medical officer" amounts to a breach of the clause of the Medical Act providing for the punishment of the false use of titles. But they clearly convey a false impression, and, if not illegal, are highly discreditable.

ON A CASE OF NEURALGIA OF THE LOINS.

To the Editor of THE LANCET.

SIR,—Permit me to bring to the knowledge of your readers, through the medium of your valuable journal, a case of neuralgia of the loins, which I trust will prove interesting. The singular circumstances under which it makes its appearance, and its refusal to yield to all the remedies hitherto known, make the case an exceptional one.

A. B——, aged thirty, has been suffering since 1866 from a pain in the region of the loins, which he feels every day more or less acutely according to the state of the atmosphere. The intensity of the pain is greater in a cold, damp air, or when the patient is attacked by a rheum or a bronchial catarrh through cutaneous cooling. This pain is generally felt in one spot, either on the right or on the left in the region of the loins, and sometimes also it spreads throughout the region. It only comes on during certain hours of the day, and after its cessation the patient cannot point with precision to the exact spot where he had felt it a few minutes before. The special character of this pain consists in the fact that it comes on only during the early part of the morning, and precisely at the time when the patient, after some hours' sleep, remains in bed in a state of semi-consciousness; it stops entirely as soon as he is quite awake, and either sits up in or gets out of bed. With the existing physiological notions it is not easy to explain the connexion between neuralgia and the state of sleep, or the cessation of the pain as soon as the patient is quite conscious; in fact, it must be observed that whenever for business purposes or other causes he awakes earlier than usual—that is, after four or five hours' rest,—the pain does not manifest itself; this is also the case whenever the patient, accidentally awaking after a rest of six four hours, again falls asleep for two or three hours longer. This pain, constantly felt every morning since 1866, has, nevertheless, disappeared of its own accord some three or four times during all this period for a few days each time, and then reappeared, nothing having happened in the meanwhile to explain the reason of such recurrence. At other times it disappeared by the aid of certain remedies hereinafter mentioned, but again made itself felt, though the same remedies were still administered in increased proportions, and for a comparatively long period. The state of the patient's health is not unsatisfactory; digestion, general nutrition, and strength good; the urine, whenever examined, has invariably been found in its normal state. Long walks, shooting, riding, physical work, and coitus, have no influence of any kind on the pain. During the many years of suffering the following remedies have been successively employed:—1st. Blisters on the region of the loins, with momentary relief. 2nd. Sulphate of quinine at intervals and in large doses, without benefit. 3rd. Electricity by means of faradisation or constant current, applied by an able and experienced man, also without any result. 4th. Hydrotherapy for a long time, either as an accessory to the treatment, or local in the shape of derivative douche, brought no ease. 5th. Bromide of potassium produced for some days the cessation of the pain; but it reappeared, though large doses of the same were still administered. 6th. Chloral hydrate in large proportions has also proved fruitless, as has been the case with all the narcotics used, both externally and internally. It is useless to state that during this period a tonic treatment has never been neglected, and sea-baths resorted to in the summer months.

I am desirous to bring this case before your readers—first, because I consider it worthy of a scientific investigation; and also in order to gather the suggestions of those gentlemen who might have had a similar case during their practice, and succeeded in curing the patient.

I remain, Sir, yours respectfully,

DR. F. TROMBETTA,
Assistant-Professor to the University of Messina.

Messina, March, 1873.

Mr. J. Denny.—The best works on Logic are those of Mill and Bain. The latter author has also written a work on Mental Philosophy. Maudsley's work is an excellent one on the same subject.

THE LATE DR. CLAYTON.

Athy, April 2nd, 1873.

At a public meeting in the Town Hall, Athy, convened to express sympathy with the family of the late lamented Dr. W. B. Clayton, who was killed by a fall from his Croydon on the 23rd of March last, in this town, where he had been dispensary doctor for nearly thirty years, it was resolved to solicit subscriptions for his widow and eight children, who have been left wholly unprovided for, and this has occurred through no improvidence. He endeavoured some years ago to insure his life, but was found ineligible.

Your subscription is earnestly solicited.

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Zeta.—The cheapest qualification in England is that of the Apothecaries, costing six guineas. Candidates are required to have been apprentices to apothecaries. If our correspondent's case meets this requirement, he should state the other particulars of it to the Society, who might make allowances, and admit him to examination. A L.M. of a lying-in hospital can attend midwifery; but he cannot enforce payment for attending to diseases of women and children.

M. B. C. M.—The title of "physician" generally implies some relation to a College of Physicians. The title of "surgeon" cannot be regarded as used falsely by a Master of Surgery. Our correspondent will find the question of adulteration treated of by Dr. Parkes in his book on Hygiene.

E. W.—We are unable to afford any information regarding the alleged remedy for diabetes and Bright's disease of which our correspondent forwards us an advertisement from a daily paper.

M. B. should write on different paper. We cannot read his letter.

ERRATUM.—In our issue of the 5th instant (page 499), in reference to the testimonial presented to Dr. McKendrick, instead of the time being *ten* years during which he has conducted the work of the systematic class, it should have been stated as *two* years, or rather winter sessions.

COMMUNICATIONS, LETTERS, &c., have been received from — Dr. Barnes, London; Dr. Maudsley, London; Dr. Buzzard, London; Mr. Jones, Surbiton; Mr. Salmon, London; Mr. Rowsell, Newcastle; Mr. Hunter, Aberdeen; Mr. Spencer Watson, London; Dr. Symes, Leeds; Mr. Sutton, Birmingham; Messrs. Tyrer and Co.; Mr. Graham, Watford; Mr. Carter, Eastbourne; Mr. Lawson, Hartfield; Mr. Mortlock, Bath; Mr. Bailey, Norwich; Mr. Smith, Walton; Mr. Handford, Spalding; Mr. B. Lolming, London; Mr. Clarke, Black Hill; Mr. Corfield, Maidstone; Mr. South, Morden; Mr. Mason, Sudbury; Mr. Ellis, Doncaster; Mr. Hunt, Bath; Dr. Moriez, Glasgow; Mr. Scott, Chepstow; Mr. Appleyard, Coventry; Mr. W. Ormond, Swindon; Mr. Ilderton, Fairfield; Mr. T. Ogilvie, York; Dr. Vallance, Stratford; Mr. M'Carthy, Leek; Mr. J. Binfield, Windsor; Mr. Edwards, London; Mr. Macrae, Whetstone; Mr. Johnson, Reading; Mr. Moore, Chatteris; Mr. Morrison, Edgbaston; Mr. Elliott, Barnsley; Dr. Taylor, Scarborough; Messrs. Blaise and Co., London; Mr. Morgan, Gloucester; Mr. Stirling, Edinburgh; Mr. Miles, Derby; Mr. Sainter, Macclesfield; Dr. Domenichetti, Penge; Mr. G. H. Whidborn, Crediton; Dr. Rees, Victoria; Mr. Stephens, North Shields; Mr. Jackson, Plymouth; Mr. Thornton, Dunmore; Dr. Reed, London; Mr. Kettle, Small Heath; Dr. Fox, Broughton; Mr. Denny, Manchester; Mr. T. Holman, London; Mr. Woodward, Cirencester; Mr. J. Maturin, Alderney; Mr. R. Wharton, Rochdale; Mr. J. Kersiake, Woodford; Mr. H. Hesketh, Bournemouth; Mr. Forsyth, Darlington; Mr. Goode, Hampton; Mr. Moore, Skelmersdale; Mr. B. Cookson, Newtown; Mr. Stowers, London; Mr. W. Terry, Somersham; Mr. G. F. Henry, South Shields; Mr. Raven, Broadstairs; Dr. Truman, Nottingham; Dr. Warden, Tobago; Mr. Allen, Sheffield; Mr. Walker; Mr. Phillips; Mr. Hinton, Buxton; Mr. Colman; Dr. Ryan, Bailieborough; Dr. Gibbs, Topsham; Dr. Leggatt, Eastby; Dr. Martin, Walkden; Mr. Hopgood, Sunderland; Mr. Holroyd, Belvedere; Dr. Kerr, Dumfries; Mr. Lyne, Plymouth; Mr. Hickinson, London; Mr. Greening, Kidderminster; Dr. Gardner, London; Dr. Little, Woolton; Dr. Sargent, Launceston; Mr. Ker, Cradley Heath; Mr. Godrich, London; Mr. Smith, Rathmines; Mr. Longman, Clifton; Dr. Axford, Southsea; Dr. Burman, Wakefield; Dr. M'Ilhatton, Corkey; Dr. Budgett, Paris; Mr. Cawthra, Bradford; Dr. Hope, Knaphill; Mr. Jeaffreson, Newcastle; Dr. Waters, Coventry; Mr. Gardiner, Long Bennington; Mr. Browning, Darlington; Dr. Ball, Spalding; Mr. Lovell; Mr. Campbell, Liverpool; Mr. Porter, Chepstow; Mr. Clark, Derby; Dr. Scholefield, Pickering; Mr. Marling, London; Mr. Colam, London; Dr. Short, Walsham-le-Willows; Dr. Wise, Plumstead; Mr. W. Johnson, Manchester; Dr. Wright, Knaresborough; Mr. Wood, Liverpool; Mr. R. Chapman, Frome; Mr. Burt, Whetstone; Mr. Wilkins, Gosport; Mr. W. Edwards, Bury; Mr. E. Newland, London; Dr. Pettigrew, London; Mr. Brownrigg, Fexton; Mr. Wood, Birmingham; Mr. Weston, Caterham; Mr. Hunter, Glasgow; Mr. Brydon, Sydenham; Dr. Wood, Great Bardfield; Dr. Bligh, Fairford; Mr. R. Samuel, Llanelly; Mr. Harvey, Bolton; Mr. Ford, Burnley; Mr. Keith, Douglas; Dr. Ewens, Corne Abbas; Mr. J. Wardell, Edinburgh; Mr. Wilson, Abergavenny; Mr. John Gamgee, London; Mr. White, Reading; Mr. Carter, Warwick; Dr. Muir, Stewarton; Mr. Aldridge, Plympton; Mr. Wharton, Skipton; Mr. Warneford, Weybridge; Mr. R. Morton, Chippenham; Mr. Morgan, London; Mr. Foster, Shirley; Mr. Brain, Dover; Dr. Griffiths, Sheffield; Mr. Stephens, Plymouth; Mr. J. Ellis, London; Mr. J. Utting, Luton; Dr. Spender, Bath; Rev. H. Croskery, Sandy Hook; Mr. Marsh, Newark; A Ratepayer; The Secretary of the Lock Hospital; A Subscriber; A. B.; L.R.C.P.; Omicron; A Fellow-Sufferer; Tyro; Health Officer; Veritas; A Practitioner in a Neighbouring Town; Zeta; M.B.; &c. &c.

Derbyshire Courier, Gazette Médicale de Paris, Irish Times, Banbury Guardian, Bradford Budget, Weekly Hampshire Independent, Lincoln Gazette, Macclesfield Guardian, Bulletin de Statistique Médicale, and *Bury Free Press* have been received.

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